HAZARDOUS WASTE MANAGEMENT PRACTICES OF THE ONTARIO DRY CLEANING INDUSTRY

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1.0 SUMMARY

As part of its mandate to identify and regulate the shipment and disposal of hazardous wastes, the Waste Management Branch of the Ministry of the Environment may prepare a policy document on the dry cleaning industry in Ontario.

This report was prepared to inventory and characterize the wastes generated by Ontario dry cleaners. Information was obtained by an industry survey in which 308 dry cleaners provided data relating to annual purchases of cleaning solvent, types and quantities of waste generated, and disposal methods practiced. In addition, sixteen dry cleaning plants were sampled to determine and characterize the solvent content in their waste residues. On the basis of these results, extrapolations were made to determine waste quantities and solvent volumes disposed of by the total dry cleaning industry in Ontario.

It is estimated that there are about 1,300 dry cleaners in operation in Ontario. Over 90% of these establishments use perchloroethylene as the cleaning solvent, with the balance using petroleum solvent (about 10%) or fluorocarbons (0.2%).

Cartridge filters and distillation units are used in approximately 90% of the perchloroethylene plants to condition and clean used solvent. These processes generate wastes in the form of spent cartridge filters and still bottom sludges from the distilling process.

Almost all (99% by weight) of the still bottom sludges containing perchloroethylene are accumulated on-site and then sent to recyclers for reclaim of the solvent. Most of the sludges from petroleum solvent plants (97%) are hauled to industrial landfill sites for disposal. The quantity of solvent losses via still bottom sludges was estimated to be 181,900 kg/yr from perchloroethylene plants and 39,500 kg/yr from petroleum solvent plants.

Most cartridges from perchloroethylene plants are disposed to municipal refuse. These cartridges are estimated to contain about 77,800 kg of perchloroethylene for the Ontario dry cleaning industry. Petroleum solvent losses in cartridges were estimated to be 22,200 kg/yr. Most of the cartridges from petroleum solvent plants are hauled to an industrial landfill site.

Most perchloroethylene plants using cartridge filters practice some form of recovery of the solvent from the cartridges. Cabinet/sniffer technology is the most commonly used. Steam-stripping is used in less than 20% of the facilities. It appears that about 1% perchloroethylene in spent filter cartridges is the lowest concentration achievable by any of the methods currently used in Ontario to remove solvent from the cartridges.

The conditioning of solvent by diatomaceous earth filtration is practiced in only about 11% of all dry cleaning plants in Ontario. The residue generated by this process, termed cooked filter muck, is disposed to secure landfill sites by the majority of plants using perchloroethylene or petroleum solvent. Approximately 13,000 kg/yr and 16,400 kg/yr of solvent losses occur via these wastes from perchloroethylene and petroleum solvent plants, respectively.

The total quantity of perchloroethylene disposed of in solid or liquid waste residues from dry cleaning plants in Ontario totalled approximately 294,900 kg in 1986, or 7.3% of the total volume of solvent purchased annually. The majority of solvent losses (almost 82%) appear to be air emissions.

Waste residues from petroleum solvent plants contained 78,100 kg of solvent, equalling 6.3% of the total solvent purchases in 1986 for the dry cleaning industry in Ontario. The majority of petroleum solvent losses are also likely to be through air emissions.

2.0 INTRODUCTION AND SCOPE

2.1 Introduction

Recent changes in Regulation 309, Ontario's waste management regulation, have resulted in more detailed definitions of hazardous wastes. As part of its mandate to identify and control the shipment and disposal of hazardous wastes under this regulation, the Waste Management Branch of the Ministry of the Environment may prepare a policy document on the dry cleaning industry in Ontario.

Dry cleaning operations represent a significant source of waste material, including still bottom sludges from the distillation of perchloroethylene which have been defined as a hazardous waste. Other wastes generated by dry cleaning establishments which also contain perchloroethylene include spent filter cartridges and diatomaceous earth filter muck from solvent filtration equipment.

As no quantitative estimates of volumes have been developed for the Ontario industry, the Ministry of the Environment requested an industry survey to identify the number of dry cleaning establishments in Ontario, quantities of wastes generated by these plants, as well as methods and type of equipment used to handle these wastes. BEAK Consultants Limited developed this background document for the MOE on the dry cleaning industry in Ontario identifying the geographic distribution of the industry, the type of processing technology used, types and quantities of wastes that could be considered hazardous, and existing regulations in other jurisdictions.

2.2 Scope

The ultimate objective of this report was to provide a comprehensive background document for the Ministry of the Environment to use in policy development for potential regulation of wastes generated by the dry cleaning industry in Ontario.

To that end, the scope of this report involved:

- survey of the industry in Ontario as to geographic distribution;

- survey of the industry to determine the cleaning process technology distribution;

- survey of the industry to determine the types and quantities of wastes generated;

- survey of the industry to determine in-plant solvent recovery technologies available;

- contact with other jurisdictions in the United States and Canada to determine the status of regulations pertaining to the dry cleaning industry;

- evaluation of the industry's response to changes in technology for cleaning or solvent recovery; and

- identification, discussion and recommendation of feasible options for the management of generated wastes in Ontario.

2.3 Study Methodology

2.3.1 Database Development

A listing of all the dry cleaning establishments in Ontario by name, address and telephone number was initially required to establish a database to determine the total number of dry cleaners in the province. A subsequent breakdown of dry cleaning plants by MOE region, processing technology and solvent use was developed through a questionnaire survey.

Southam Direct Mailing Services (SDMS) provided BEAK with a "yellow pages" listing of 1,924 establishments under the classification of "cleaners" in the province of Ontario. This list was compiled from a number of sources including yellow and white page telephone directories and select Southam-published trade journals. However, this list of "cleaners" included not only dry cleaners, but other services such as conventional launderers, carpet cleaners, janitorial services, tailors, general stores and shoe repair stores. These obvious non-dry cleaners were totalled to represent 175 listings, which were eliminated from the original starting list supplied by SDMS.

The revised list of dry cleaners was then divided into MOE regions, with same name companies grouped together. In many cases, multiple listings under the same name represented only one plant directly involved in the actual dry cleaning process, while the other listings were simply depots for clothing drop-off. Consequently, a total of 433 plants were eliminated on the assumption that their operation was strictly as a depot.

Table 2.1 gives a summary of the database development. From the starting list of 1,924 establishments, 175 listings were removed as being other "cleaning" services, while 433 listings were eliminated on the basis of depot operation only, giving a final estimated number of 1,316 dry cleaning establishments in the province of Ontario. Appendix 1 gives the establishment listing.

TABLE 2.1 SUMMARY OF DATABASE DEVELOPMENT

STARTING LIST		1,924
Exclude Obvious Non-Dry Cleaners		
Laundries	60	
Alterations/Tailors	39	
General Store	35	
Maintenance/Janitorial	19	
Carpet Cleaners	17	
Shoe Repair	5	
	175	175
Exclude Known or Assumed Depots		433
Estimated Total Number of Ontario Dry Cleaners		1,316

The Dry Cleaners and Launderers Institute (DCLI) estimated that approximately half of all dry cleaning plants in Ontario are members of the association. DCLI members total approximately 550 to 600, giving an estimate of approximately 1,200 dry cleaning establishments for both non and DCLI members. As this figure is close to that determined by BEAK, the estimate of 1,316 dry cleaners in Ontario appears reasonable.

2.3.2 Questionnaire

A mail-out questionnaire survey, developed in conjunction with the DCLI, was conducted to obtain relevant information from a relatively random sample of dry cleaners selected from the establishment listing. The information extracted from these questionnaires was included in the database for manipulation in terms of plant size distribution, geographic distribution, type of processing technology, type of solvent, quantity of solvent used, reclaim and recycle practices, and disposition of wastes. A sample questionnaire form is given in Appendix 2. The questionnaire was sent with a confidentiality statement without which it was felt the response would be slim.

A total of 308 questionnaires were sent out to dry cleaning establishments, with the number of questionnaires sent to each MOE region proportional to the total number of cleaners in that region. However, since the northwestern region had only a few listings (a detailed breakdown by region is discussed later in Section 4.2), a greater proportion of questionnaires were sent to this region than to the other five in order to ensure an adequate number of responses.

A representative sample of dry cleaners by size was also desired to develop an adequate database. The establishment listing in Appendix 1, however, only provides the name, address and telephone number of the dry cleaner, with no indication of size, solvent use, or processing technology. Therefore, it was assumed that major operators could be identified by plants with 4 or more outlets, medium-sized operators by 2-3 listings, and small plants by only one listing. As there were only 36 listings for plants with 4 or more outlets, all of these were mailed a questionnaire. The large plants were double-checked with the DCLI list to ensure none were omitted. The remainder of the questionnaires were sent to medium and small plants divided by proportion to each region.

Upon return of the questionnaire, each was reviewed thoroughly to ensure complete and reasonable responses. In some cases, the answers did not seem logical, so a telephone follow-up to these plants was made to confirm and/or correct the questionable answers.

2.3.3 Site Visits and Sampling

Sampling of wastes from dry cleaning plants was conducted to obtain information on solvent content in still bottom sludges, filter muck and spent filter cartridges. Plants were chosen to represent all possible combinations of plant size, solvent type and processing technology, as discussed further in Section 5.1 and Section 5.2. Resampling was done at one selected plant to allow for an estimation of in-plant variability. Thus both plant-to-plant variations and in-plant variations were obtained.

Plant selection was also based on convenience of plant location to the BEAK office, with site visits only in the central and west-central regions. A total of 16 plants were sampled with the focus primarily on hot and transfer technology using perchloroethylene, as these represent up to 90% of the industry in Ontario.

2.3.4 Data Evaluation

Data evaluation was performed in two stages. The initial step involved the evaluation of the questionnaires. This data was processed to obtain the distribution of dry cleaning establishments by size (in terms of quantity of clothing processed per month), processing technology, solvent use and quantities and types of wastes generated.

The second stage in the data evaluation involved the extrapolation of results obtained from the qeustionnaires to province-wide estimates. This information also helped to provide a profile on the dry cleaning industry in Ontario.

The results determined from the sampling of wastes from individual dry cleaners were used in conjunction with the questionnaire results to provide an estimate of solvent losses to the environment via wastes generated. A mass balance was then made to quantify solvent losses to determine the overall fate of solvents used in the dry cleaning industry.

3.0 INDUSTRY PROCESSING TECHNOLOGY

The process of dry cleaning involves the washing of textiles with a non-aqueous solvent. Various solvents are used or have been used for this process. These include petroleum or Stoddard solvent, carbon tetrachloride, trichloroethylene, perchloroethylene (tetrachloroethylene), 1,1,1-trichloroethane and various fluorocarbons.

Perchloroethylene, commonly referred to as "perc", has been the preferred solvent for use in dry cleaning plants for the past three decades due to its stability, high water insolubility, good recoverability and relatively low cost. Prior to that time, Stoddard solvent was the predominant dry cleaning solvent, but its use declined due to the fire hazard presented by its flammability. These petroleum solvents (e.g., trade name Varsol^{TM}) still account for roughly 10 to 15% of dry cleaning solvent use in Ontario.

There are three different dry cleaning processes or technologies commonly used in the dry cleaning industry. They are the following:

1. Cold or Transfer Technology;
2. Hot or Dry-to-Dry Technology; and
3. Refrigerated or Fully-Enclosed Technology.

3.1 Cold or Transfer Technology

In transfer technology (also called wet-to-dry processing), fabrics are first washed with solvent in a washer-extractor similar to a conventional front loading washing machine. Fresh solvent is pumped from a storage reservoir usually located beneath the washer. The washing cylinder revolves and tumbles the textiles into the continually recirculating solvent. During the cleaning cycle, the solvent is continuously filtered to remove soil, lint and other particulate material removed from the fabrics. Normal practice is to provide a sufficient solvent flow to create one solvent volume change per minute of wash cycle. After the timed wash cycle, the solvent is drained from the washer and then the fabrics are spun in the cylinder to remove or extract solvent by centrifugal action. The small quantities of water and detergent present as additives in the solvent (used to remove water soluble dirt) are also removed from the fabrics during the spin/extraction cycle.

Following the extraction process, the clothing is manually removed or "transferred" from the washer-extractor to a reclaiming tumbler-dryer. Total transfer time can vary from one to three minutes. During the initial phase of the drying cycle, the clothing is tumbled dry with forced hot air. The solvent-laden air from this initial phase is passed over a water-cooled condensing coil to recover solvent removed from the fabrics. This air is then reheated and directed back into the drying cylinder. This phase of the drying process lasts approximately fifteen to twenty minutes, and is a closed loop process with no external venting of the unit.

The drying cycle concludes with an aeration or deodorization phase with ambient air to remove any final traces of solvent. Dampers are opened on the drying unit either manually or automatically and outside air is drawn in. The unit is simultaneously vented either to the outside of the plant, or to a secondary recovery device which will remove the last traces of solvent in the discharge air. The most commonly used secondary recovery device is a carbon adsorption unit usually referred to as a "sniffer". This system normally consists of 135 to 180 kg of carbon contained within a housing. A fan on the unit draws the vented air from the tumbler through the carbon bed where any traces of perc are adsorbed. The purified air, which usually contains less than 30 ppm of perc, is then vented outside the plant. The carbon in the sniffer is regenerated on a regular basis. In an "average" plant, this stripping process yields 15 to 25 litres of perchloroethylene everytime the unit is stripped. The carbon bed has a life span of 5 to 7 years and does not represent a major source of wastes from drycleaning plants.

In most plants, the washer-extractor unit is equipped with a fan which is automatically activated during the transfer operation to create a negative draft at the door of the unit. The air drawn into the washer-extractor in this operation is also vented to the carbon adsorber.

Recovered solvent condensed out in the initial phase of the drying process passes through a baffled water separator, where the denser solvent settles while the "floating" water is discharged, first to a bucket and then to the municipal sewer system. In some installations, the discharged water is piped directly to the sewers. However, this is not considered advisable since a malfunction in the system could cause solvent to be unknowingly lost into the sewers. Concentrations of perchloroethylene in water discharged to municipal sewers have been found to range from 1 to 40 ppm. The recovered solvent is then returned to the solvent storage tank generally through a closed pipe or in some instances, by manual transfer.

Figure 3.1 gives a simplified schematic representation of a typical transfer process. The mode of operation used may vary from plant to plant depending on modifications implemented by individual operators. However, the basic operation is the same.

Both perchloroethylene and petroleum solvent are used with transfer technology. It is, in fact, the only technology used with petroleum solvents. In the petroleum plants, there are a couple of significant variations to the process previously described. Historically, reclaiming tumblers have not been used in petroleum plants. Although they are now available, most plants still use conventional type tumblers which simply vent outside the plant. A petroleum-reclaiming tumbler is considerably more elaborate and expensive than its perc counterpart. Because of the flammability of Stoddard solvent, these units must be explosion-proof. Also, because of the relatively high boiling point of Stoddard solvent, these units operate under vacuum. Both of the foregoing factors add considerably to the cost of these units.

There are no secondary recovery devices used in petroleum plants as they are generally regarded as not economically competitive.

3.2 Hot or Dry-to-Dry Technology

In "hot", or dry-to-dry units, the washer-extractor and tumbler-reclaimer functions are combined into a single unit. All the operations in this process are similar to those used in transfer technology with the obvious elimination of the transfer step. Due to the elimination of the transfer operation, these units generally make more efficient use of perchloroethylene than cold units, provided they are properly operated and maintained. Since the drying operation is done in the same cylinder as the washing operation, hot units must be of greater capacity than their cold counterparts to achieve the same level of production. Hot units are used only with perchloroethylene. It is significant to note that these units are also vented to a carbon adsorption unit of the type described earlier. Figure 3.2 depicts a typical dry-to-dry operation.

3.3 Refrigerated or Fully-Enclosed Technology

Refrigerated technology is similar to hot technology in that all operations are accomplished in one unit. However, as the name implies, the unit is completely sealed

FIGURE 3.1: Typical Transfer Process

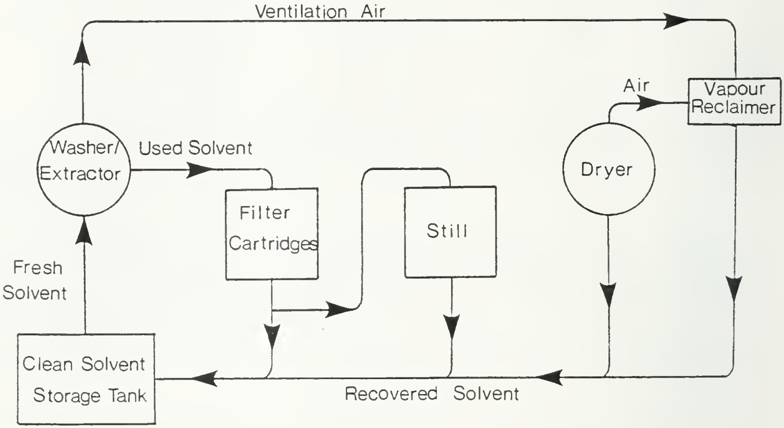
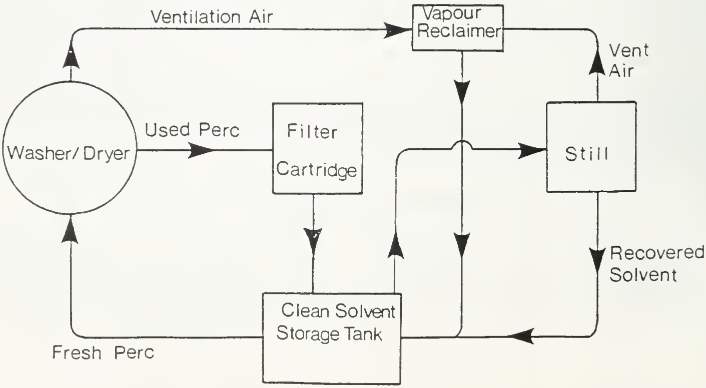


FIGURE 3.2: Typical Hot Process



with no venting to either the atmosphere or a secondary recovery unit. For obvious reasons, this leads to considerably more efficient use of the solvent than in either of the two methods previously described. In order to eliminate the need for venting, these units employ refrigeration units instead of conventional steam/electric heat and water-cooled condensing coils. The refrigeration-evaporating coil acts as the condensing coil for the solvent, while the refrigeration-condensing coil acts as the heating unit. These units generally employ R-502 refrigerant operating under a fairly high pressure. This produces enough heat in the refrigeration condenser to almost eliminate the need for any further source of heat. However, most of the fully-enclosed units are equipped with some sort of steam or electric heat booster. The cold temperature produced by the refrigeration-evaporating coil leads to extremely efficient solvent recovery, thereby eliminating the need for a deodorization cycle and hence the need for venting.

As was the case with hot technology, these refrigerated units must be larger than transfer units to achieve the same level of production. In North America, the majority of refrigerated units use perchloroethylene, although there is some use of trichlorotrifluoroethane (Freon 113). Because of their extreme volatility, these fluorocarbon solvents must be used in fully-enclosed units.

3.4 Solvent Reconditioning and Recovery Systems

3.4.1 Approach to Reconditioning and Recovery

Solvent discharged from the dry cleaning process contains soluble oils, fat and grease, as well as insoluble particulate matter which was removed from the clothing during the wash cycle. These compounds tend to impart odours and other undesirable characteristics to the solvent. For the majority of dry cleaning operations in Ontario, these impurities are removed from the solvent by continuous filtration of the solvent through cartridge filters or diatomaceous earth filters, during the wash cycle. Periodic distillation of the solvent is also required to remove non-volatile residues.

In distillation units, the contaminated solvent is heated to its boiling point, and the vapours are condensed to recover pure solvent. The various non-volatile residues remain behind as still-bottoms. This process is relatively unsophisticated in terms of process control, which leads to large variations in the amount of solvent contained in the still

bottoms.

Many petroleum and even some perchloroethylene plants have either reduced or eliminated the distillation process in recent years. In the case of perchloroethylene plants, this is generally done to eliminate the costs of distillation which can be substantial, particularly if a distillation unit is not functioning properly.

Distillation units for petroleum solvent generally operate under vacuum due to the relatively high boiling point of these solvents. Distillation is often eliminated due to the lack of availability of the vacuum distillation units. As these units wear out, many operators find it more economical to dispose of spent solvent rather than attempt to locate a new vacuum still or rebuild their existing distillation unit.

In dry cleaning plants where distillation has been discontinued, operators will condition the solvent by filtration. Most establishments, however, will use both filtration and distillation.

Filtration of spent solvents is most commonly accomplished using cylindrical cartridges which are categorized based on the type of inner filter matrix:

Paper Cartridge: Consists of heavy paper folded in accordian-type pleats. Standard and Jumbo sizes.

Carbon-Core Cartridge: Consists of an outer ring of pleated paper with an inner core of granular activated carbon. Standard and Jumbo size.

Solid Carbon Cartridge: Contains only granular activated carbon. Used in conjunction with either carbon-core or plain paper cartridges. Standard and Jumbo size.

Adsorptive Cartridge: Small outer ring of pleated paper with large inner core of activated carbon and clay. Jumbo size only.

The filter matrix is enclosed within a perforated metal shell. Solvent flows from the

exterior of the cylinder through the small perforations into the inner annulus. Insoluble particles are removed by the paper portion of the filter. In the case of carbon-core or adsorptive cartridges, the inner core of the carbon and/or clay acts to remove solvent soluble dyes, fatty acids and other undesirable materials. Solid carbon cartridges are used only for the control of fugitive dyes.

The cartridges, which are contained within a filter housing, can be used in several different configurations depending on the manufacturer of the unit. One type of filtration unit may contain as many as twenty-one of these cartridges. Larger establishments may run a number of these units in parallel. Cartridges generally have a service life of 300 to 500 kg of clothing processed. However, depending on the dry cleaner, cartridges may be changed as often as every 200 kg, to as infrequently as 1000 kg of dry cleaning processed.

Soil filtration can also be accomplished using diatomaceous earth filters. Unlike cartridges which are "disposable" units, diatomaceous earth filters contain a permanent mesh which acts as a support for the filtering medium. These filter screens of cloth or metal can be flat; tubular or in bag form, with the tubular arrangement being the most common. Diatomaceous earth is added to the solvent and the solvent is then circulated through the filter. As the diatomaceous earth passes through the filter, it collects on the screens and forms a filtering medium. This medium remains intact as long as constant solvent pressure is maintained. As the filtering medium becomes spent, back pressure increases and solvent flow drops to an unacceptable level. The filter cake is then purged from the unit, generally by compressed air, or occasionally by mechanical force. The filter cake containing diatomaceous earth, various soils and solvent is then distilled or "cooked" to remove and recover the entrapped solvent. The resulting cooked filter muck is generally a fairly dry powder. The use of diatomaceous earth filtration has declined substantially mainly due to the convenience and cleanliness of cartridge filtration. Also, diatomaceous earth is a silica and as such is classed as a Designated Substance under the Ministry of Labour's Occupational Health and Safety Regulation. This act imposes strict regulations on the storage and handling of such substances. It is interesting to note, however, that recent developments in filtration technology in Europe have drastically increased the convenience, efficiency and hence the viability of diatomaceous earth filters. This could lead to the increased use of this type of filtration once again.

3.4.2 Solvent Recovery from Cartridge Filters

There are three basic methods used to remove perchloroethylene from spent cartridge filters. These include:

1. Drying with room temperature air;
2. Drying with hot air; and
3. Azeotroping with live steam.

The recovery of perc from filter cartridges by any of the above methods involves removing perc from paper, insoluble soil and an adsorbent consisting of activated carbon and/or clay.

Insoluble soil consists of lint and dust removed from the clothes during washing. It collects as a layer covering the paper and the outer metal portion of the cartridge. The removal of perchloroethylene from this essentially non-adsorbent material is considered to be relatively easy. The paper layer in the filter cartridge has a large surface area, is relatively thin and has little tendency to adsorb perchloroethylene. These properties all combine to allow for the easy removal of perc from the paper. Any of the three listed methods would likely be adequate for removing perchloroethylene from both paper and dirt. The largest quantity of perchloroethylene, however, is adsorbed onto the activated carbon and/or clay which provides a more difficult challenge for solvent removal, since these materials have many small pores and a large surface area which collects and traps the solvent. Most plants can recover at least 3.0 litres of solvent per cartridge, with more efficient operations reclaiming up to 6.0 litres.

Both room temperature air and heated air remove perchloroethylene from the carbon by the same mechanism. The solvent in the carbon is at equilibrium with the perc vapour present in the air directly adjacent to the carbon. As air carries away the vapour, more perc evaporates from the carbon to maintain equilibrium. However, as the carbon starts to dry, there is less perc in the vapour space and the drying process becomes extremely slow. The use of heated air displaces the equilibrium and results in slightly more perc removal, but recovery also becomes extremely slow at lower perc concentrations.

Room Temperature Air

A drying cabinet connected to a carbon adsorber is the main type of equipment used for drying cartridges with ambient air. Air is constantly pulled over the cartridges and then vented to the carbon adsorber. If the carbon adsorber to which this cabinet is connected is sized based only on the dry cleaning equipment, then the addition of a ventilation cabinet would rapidly overload the adsorber causing the perc fumes to merely vent to atmosphere.

Heated Air

The easiest way to dry cartridges using heat is to place them in the air stream of the tumbler/reclaimer or in a dry-to-dry unit. Some manufacturers have claimed that 99.99% recovery of solvent after eight hours of drying in a tumbler/dryer is possible. However, such removal efficiencies have not been observed in practical applications (see Table 5.4).

Azeotroping/Steam Stripping

The third method of recovering solvent from spent cartridges involves the use of steam stripping. The steam initially evaporates and displaces the liquid perc within the cartridge. The heat provided by the steam then flushes away the vapours (which are in equilibrium with the perc in the carbon) in the same manner as with hot air. The steam also forms a lower boiling azeotrope with perc which greatly improves the ease of removal of solvent. An azeotrope is a liquid-vapour mixture of two or more substances which behaves like a single substance. The azeotropic boiling point for perc and water is 190°F, compared to 250°F and 212°F, respectively, for the pure compounds (Dow Company Literature).

One of the simplest steam stripping methods involves placing the cartridges on top of the carbon bed of a carbon adsorber, where they will be stripped with steam during carbon bed regeneration. However, this results in only about 50% removal of the perchloroethylene.

Another method used by some dry cleaners is to place the cartridges in a still and boil them in water until no more perc distills over with the water. This requires large volumes of water and a large still. Perc removal was found to be 95 to 97% complete after seven to ten hours. However, not many old large stills are still available and large volumes of contaminated water are produced.

The direct injection of steam through cartridges in a direction opposite to the solvent flow is an efficient method to remove perchloroethylene from cartridges. The steam flow displaces liquid solvent from the cartridges directly into a condenser/separator.

One supplier manufactures a filter arrangement fitted with accessories to allow stripping of the cartridges directly in the filter housing. This method is very efficient in removing perc with the added advantage that wet cartridges containing perc never have to be handled. The major disadvantage, however, is that filtration cannot be carried out while cartridges are being stripped.

Another manufacturer has developed a combination cartridge stripper and still. Cartridges are placed over tubes from which steam is emitted. Any solvent initially displaced as liquid is distilled by the bottom steam coil of the still. Once the temperature in the cartridge is high enough, perchloroethylene beings to steam distill out of the cartridges as an azeotrope.

4.0 INDUSTRY PROFILE

4.1 Data Sources

A number of different sources were contacted and reviewed to obtain the information required to develop a background profile on the dry cleaning industry.

The first stage in developing the industry profile required the determination of the total number of dry cleaning plants in operation in Ontario. As discussed earlier in Section 2.3.1, Southam Direct Mailing Services provided a list of 1,924 cleaning services within all of Ontario, which was later revised to include only dry cleaning establishments. The final list of 1,316 establishments provides a breakdown of dry cleaners by the six designated MOE regions, along with the name and full address of each establishment. The complete list is given in Appendix 1.

From this list, approximately 300 dry cleaners were randomly chosen and sent a questionnaire to obtain detailed information on their dry cleaning operations. The questionnaires returned provided information on the distribution of plants by size, processing technology, solvent usage, types and quantities of wastes generated, as well as comments from the individual operators on their concerns and questions regarding dry cleaning waste disposal problems. This data was required in order to calculate averages and trends to use in extrapolating to province-wide estimates for the dry cleaning industry.

Communication with the industry association, the Dry Cleaners' and Launderers Institute (DCLI), was maintained regularly. DCLI provided assistance on the make-up of the industry, and participated as an industry information source. Industry statistics calculated by BEAK (such as the total number of dry cleaning plants and the breakdown between solvent types used), were compared to estimates made by the DCLI for the same items. In most cases, the two numbers were within a reasonable range, verifying the validity of results obtained by BEAK.

Solvent manufacturers were contacted to determine the quantity of perchloroethylene sold annually to suppliers, who in turn sell the solvent to the dry cleaners. These figures

were compared to estimates made of the total annual solvent purchases, calculated by extrapolation of values determined from the questionnaires. A check between the two numbers obtained from different sources verified the accuracy of the extrapolation procedures followed.

Information on solvent use practices was also obtained through discussions and on-site visits to selected manufacturers, distributors and dry cleaners. Manufacturers of dry cleaning processing equipment, filter cartridges, solvent recovery systems, and recyclers of still bottom sludges were contacted as well to obtain background information to ensure that all aspects of the dry cleaning operation and its' associated industries were covered. Discussions with knowledgeable industry spokesmen and telephone discussions with several firms provided opinions and perceptions into trends within the industry, estimates on the quantity of equipment sold, as well as other information relevant to this study. The haulers and recyclers of the chlorinated wastes generated by dry cleaning operations were also contacted to verify the answers obtained from the questionnaires, and to obtain their insights into the waste disposal practices of the industry.

4.2 Geographic Distribution by MOE Region

The distribution of dry cleaning establishments by MOE Region is given in Table 4.1. The Central Region, which covers the most densely populated area in Ontario (including Metropolitan Toronto), contains the largest number of dry cleaners, with 64% of the total 1,316 plants located within this area. The Southwestern and West Central region each contain approximately 12%, or 156 dry cleaning plants, while a slightly smaller percentage (8%) operate within the Southeastern region. The Northwestern region contains the fewest number of dry cleaning establishments (less than 20 plants), due to the sparsely populated areas covered by this region (including the counties of Thunder Bay, Rainy River and Kenora). The Northeastern region contains slightly more dry cleaning establishments, with a total of approximately 40 plants in operation, representing 3% of the total number in Ontario. Appendix 1 provides a list of the 1,316 dry cleaners grouped by region.

TABLE 4.1 DISTRIBUTION OF DRY CLEANING ESTABLISHMENTS BY MOE REGION

MOE Region	Total Number of Plants	Percent Distribution
Southwestern	156	12
West Central	156	12
Central	845	64
Southeastern	102	8
Northeastern	39	3
Northwestern	18	1
	1,316	100%

4.3 Questionnaire Evaluation

A total of 308 questionnaires were mailed out to plants selected from the list of 1,316 Ontario dry cleaning establishments. This represents approximately 23% of the total industry. Table 4.2 indicates the distribution by MOE region of questionnaires mailed out versus questionnaires returned. The selection of plants to receive questionnaires was done on a relatively random basis, except for the intentional selection of the majority of large plants (approximately 40 in total) and the mailing of questionnaires to more than half of the plants in the Northwestern region, to ensure that an adequate response was received from both these areas. An attempt was also made to keep the percentage distribution by MOE region of questionnaires mailed out, as similar as possible to the percentage distribution by MOE region for the total number of dry cleaners.

Of the 308 questionnaires mailed out, 28%, or 85 were returned. However, in some cases, one questionnaire was completed for a number of plants operating under the same

name. Therefore, an actual total of 158 plant responses was received. These 158 plants represent 12% of the total number of dry cleaning plants in Ontario. The majority of dry cleaners responding to the questionnaire were members of the DCLI, even though both DCLI and non-DCLI members were mailed out questionnaires relatively equally. It is also interesting to note that the dry cleaners in the Northeastern and Northwestern regions returned the highest percentage of questionnaires mailed to them (43% and 36% respectively), while the Central region had the poorest response, with only 23% of the dry cleaners responding to the survey.

TABLE 4.2 QUESTIONNAIRE DISTRIBUTION BY MOE REGION

MOE Region	Plant Distribution Number	%	Questionnaires Sent Out Number	%	Questionnaires Returned Number	%	Total Plants Responding Number	%
Southwestern	156	12	36	12	12	14	14	9
West Central	156	12	51	16	15	17	21	13
Central	845	64	163	53	38	45	79	50
Southeastern	102	8	33	11	10	12	30	19
Northeastern	39	3	14	5	6	7	6	4
Northwestern	18	1	11	3	4	5	8	5
	1316	100	308	100	85	100	158	100

4.3.1 Distribution by Solvent Use

The three types of solvent currently used by the dry cleaning industry include perchloroethylene (perc), petroleum solvent, and fluorocarbons. Table 4.3 gives a breakdown on the quantities of each solvent purchased annually, along with the quantity of dry cleaning processed by each solvent, for the 158 dry cleaners responding to the questionnaire survey.

TABLE 4.3 DISTRIBUTION BY SOLVENT USE OF DRY CLEANING ESTABLISHMENTS SURVEYED

Solvent	Dry-Cleaning Plants #	Dry-Cleaning Plants %	Annual Solvent Purchases (litres)	Annnual Dry Cleaning Processed (kg)	Percent of Dry Cleaning Processed By Solvent Type
Perchloroethylene (Perc):					
Plants using only Perc	141	89.2	1,037,000	9,967,000	76.7
Plants using Perc + PS	8	5.1	32,000	473,000	3.7
	149	94.3 *	1,069,000	10,440,000	80.4
Petroleum Solvent (PS):					
Plants using only PS	8	5.1	125,500	386,600	3.0
Plants using PS + Perc	8	5.1	784,000	2,134,000	16.4
Plants using PS + FC	1	0.6	2,500	5,500	0.04
	17	10.8 *	912,000	2,526,100	19.44
Fluorocarbon (FC):					
Plants using FC + PS	1 +	0.6 *	800 kg **	22,000	0.2
				12,988,100	100.0

* Percentage of dry cleaning plants utilizing a particular type of solvent calculated using the total number of plants responding to the questionnaire survey (158 from Table 4.2).

** Fluorocarbons sold on a weight basis while perc and PS sold on a volume basis.

\+ DCLI indicates only about 3 plants using FC in all of Ontario.

Of the 158 plants surveyed, 94.3% use perchloroethylene, 10.8% use petroleum solvent, and 0.6% use a fluorocarbon (trade name Valclene). The sum of the percentages totals greater than 100%, since some of the plants surveyed use 2 types of solvent and will therefore be counted twice. For example, of the 158 plants, 141 use only perchloroethylene, 8 use only petroleum solvent, 8 use both perchloroethylene and petroleum solvent, while only one uses both petroleum solvent and Valclene (fluorocarbons).

According to a MOL Study (1982), perchloroethylene is used in 80 to 90% of the dry cleaning establishments, with petroleum solvent making up the remaining 10 to 20 percent. Fluorocarbons are only used in approximately three plants in all of Ontario (based on DCLI information), representing about 0.2% of the total numbers of plants. The number of dry cleaners currently using Stoddard's solvent has likely decreased below the range given by the 1982 MOL study, due to the fact that many plants are replacing their old transfer units with new hot or refrigerated perc units. The values obtained from the questionnaire on the breakdown between solvent usage can therefore be considered as representative of the total industry.

The 17 plants using petroleum solvent account for about 19% of all the dry cleaning processed, even though these plants represent only 11% of the 158 plants surveyed, whereas the 94% of the plants utilizing perchloroethylene process only 80% of all the dry cleaning. The reason for this imbalance is due to the inclusion of one very large petroleum solvent plant which services a multitude of depots and does substantially more dry cleaning than any other large plant in the province. Of the total 12,988,100 kg of dry cleaning processed by the plants responding to the survey, over 13% was cleaned by this one large plant. If this figure is excluded from the totals, then the perchloroethylene plants, which represents 94% of the total plants, would process about 93% of the dry cleaning while the petroleum solvent plants would process about 7%.

4.3.2 Distribution by Technology and Plant Size

4.3.2.1 Distribution by Plant Size

Dry cleaning plants can be categorized into groupings based on the size of each plant and the type of processing technology used. On the basis of discussions with DCLI, and upon

review of the questionnaires, it was decided to breakdown the dry cleaning establishments into either a small, medium or large category using the following criteria:

Small Plant - Less than 3,000 kg of dry cleaning processed monthly (less than 36,000 kg/yr)

Medium Plant - From 3,000 to 7,500 kg of dry cleaning processed monthly (36,000 to 90,000 kg/yr)

Large Plant - More than 7,500 kg of dry cleaning processed monthly (greater than 90,000 kg/yr)

Table 4.4 gives a detailed distribution of dry cleaning establishments using this sizing criteria.

A further breakdown of plant size can be made on the basis of the number of persons employed in the dry cleaning establishment. As estimated by the DCLI, a small establishment is designated as a plant employing from 1 to 10 persons. The DCLI also defines a medium plant as one employing from 11 to 50 persons, while large plants are classified as those employing more than 50. These size designations are equivalent to the monthly processing ranges given above.

There are approximately 40 large plants in Ontario which represent about 7% of the total dry cleaning industry. Virtually all these large plants are members of the DCLI. The majority of the DCLI membership (which totals approximately 600 plants), however, is comprised of small establishments, representing 75 to 80% of the total members. The DCLI estimates that this size range also constitutes a similar percentage of non-DCLI members, with the remaining 17-22% consisting of medium-sized plants.

The results from the questionnaires indicate that 58 plants, or 37% of the plants surveyed, fall into the small category. This percentage is substantially lower than the DCLI estimate of 75 to 80%. There are two probable reasons for this discrepancy. One is that 37 of the estimated 40 large plants returned a questionnaire, making the averages more heavily weighted towards the large plants than would actually be the case when considering the total number of plants over the entire province.

TABLE 4.4 DISTRIBUTION BY SIZE OF DRY CLEANING ESTABLISHMENTS SURVEYED

Solvent Used	Size Distribution						Total Number of Plants
	Small		Medium		Large		
	Number	% (1)	Number	% (2)	Number	% (3)	
Perchloroethylene Only	50	86	59	94	32	86	141
Petroleum Solvent Only	4	7	3	5	1	3	8
Perchloroethylene and Petroleum Solvent	3	5	1	1	4	11	8
Valclene and Petroleum Solvent	1	2	-	-	-	-	1
	58	100	63	100	37	100	158

Note: Small - Less than 3,000 kg of dry cleaning processed monthly
Medium - 3,000 to 7,500 kg of dry cleaning processed monthly
Large - More than 7,500 kg of dry cleaning processed monthly

(1) - % - Based on total number of small plants (58)

(2) - % - Based on total number of medium plants (63)

(3) - % - Based on total number of large plants (37)

Also, smaller establishments, often referred to as "mom and pop" operations (in reference to a family-run business), would be less inclined to answer a survey than larger establishments which tend to be more aware of disposal concerns and therefore more willing to assist by answering a questionnaire survey. It therefore appears likely that the percentage estimate of plant size distribution as given by the DCLI is valid and can be used for extrapolating to province-wide values in subsequent sections of this report.

4.3.2.2 Distribution by Processing Technology

Table 4.5 gives a further breakdown of plant size by processing technology. Most of the plants surveyed use only one type of processing technology, although 8% (or 12 plants) utilize two or all three types of processing in their dry cleaning plant. Of the plants surveyed, transfer is the most commonly used dry cleaning technology, with 71% of the small plants, 57% of the medium, and 57% of the large plants employing this process. This represents 62% of the total 158 plants which use the transfer process. As indicated in Table 4.6, almost 60% of the dry cleaning is processed using transfer technology, with the majority done by large plants. As mentioned earlier, this value is probably slightly high due to the inclusion of one very large petroleum solvent transfer plant which would tend to unbalance the averages.

Hot technology is used by 34% of the small plants, 29% of the medium plants, and 49% of the large plants, giving an overall average of 37% when the total 158 plants are taken into consideration. The 56 plants utilizing hot technology process approximately 34% of the annual dry cleaning carried out by the plants surveyed. Refrigerated plants account for approximately 11% of the total number of establishments, accomplishing over 6% of the total dry cleaning processed. Most of the refrigerated plants fall into the medium-size range, with only one large refrigerated plant responding to the questionnaire.

TABLE 4.5 DISTRIBUTION BY PROCESSING TECHNOLOGY AND SIZE OF DRY CLEANING ESTABLISHMENTS SURVEYED

Processing Technology	Dry Cleaning Size Distribution Small Number	% 1	Medium Number	% 2	Large Number	% 3	Dry Cleaning Plants Number	%
Transfer Only								
Perc	30	51.7	32	50.8	15	40.5	77	48.7
PS	4	6.9	3	4.8	1	2.7	8	5.1
Perc + PS	-	-	1	1.6	-	-	1	0.6
Sub-Total	34	58.6	36	57.2	16	43.2	86	54.4
Hot Only								
Perc	15	26.0	18	28.5	15	40.5	48	30.4
Refrigerated Only								
Perc	2	3.4	9	14.3	1	2.7	12	7.6
Transfer & Hot								
Perc	2	3.4	-	-	1	2.7	3	2.0
PS(Tr) + Perc(Hot)	3	5.2	-	-	1	2.7	4	2.5
Sub-Total	5	8.6			2	5.4	7	4.5
Transfer & Refrigerated								
Perc	1	1.7	-	-	-	-	1	0.6
PS(Tr) + Perc(Refrig)	-	-	-	-	2	5.4	2	1.3
PS(Tr) + FC(Refrig)	1	1.7	-	-	-	-	1	0.6
Sub-Total	2	3.4			2	5.4	4	2.5
Transfer, Hot & Refrigerated								
PS(Tr) + Perc(Hot, Refrig)	-	-	-	-	1	2.7	1	0.6
TOTALS	58	100.0	63	100.0	37	100.0	158	100.0

1- % based on total number of small plants (58)
2- % based on total number of medium plants (63)
3- % based on total number of large plants (37)

Perc = perchloroethylene
PS = petroleum solvent
TR = transfer technology
FC = fluorocarbon

An efficiency parameter of interest is the solvent "mileage", calculated as litres of solvent used per 1000 kg of dry cleaning processed (or lbs of process per gallon). Values for the different technologies have been quoted (DCLI) as:

SOLVENT MILEAGE		TECHNOLOGY
40 to 50 L/1000 kg	(200 to 250 lbs/gallon)	Transfer
20 to 25 L/1000 kg	(400 to 500 lbs/gallon)	Hot
10 to 13 L/1000 kg	(800 to 1000 lbs/gallon)	Refrigerated

for perchloroethylene plants. However, as seen in Table 4.7, the range of solvent mileage obtained can vary substantially, and is generally higher than the DCLI estimated. Perchloroethylene mileage at large plants is within the range as quoted by the DCLI. Medium and small plants, however, appear to use 2 to 5 times the solvent per 100 kg of dry cleaning estimated by DCLI.

Certain general observations can be made on the solvent usage per 1000 kg of dry cleaning. Solvent use decreases (i.e., becomes more efficient) when going from transfer, to hot, to refrigerated technology. Solvent use decreases in going from small to medium to large plants. An average for solvent usage in large refrigerated plants was not obtained since only one large refrigerated plant responded. The range of solvent mileage is particularly diverse for small and medium transfer plants. This large variability is due in part to the various ways in which different operators transfer clothing from one machine to another, i.e., clothing may have most of the solvent extracted through an adequate spin cycle, whereas some operators may remove clothing still dripping with solvent.

Petroleum solvent plants have much higher values of solvent usage than equivalent perchloroethylene transfer plants. Perchloroethylene is approximately three times more expensive than petroleum solvent, leading to a greater incentive to recover perchloroethylene. Petroleum solvent transfer machines are also usually older than the equivalent perchloroethylene transfer machines, with solvent losses occurring through parts of the machine which may have become worn down through prolonged use.

TABLE 4.6 DISTRIBUTION OF DRY CLEANING ESTABLISHMENTS SURVEYED BY PROCESSING TECHNOLOGY, SOLVENT USE AND QUANTITIES OF DRY CLEANING PROCESSED

	SIZE DISTRIBUTION													
	SMALL			MEDIUM			LARGE							
	No. of Plants	Kg of Dry Cleaning Processed/yr	Solvent Use L/yr	No. of Plants	Kg of Dry Cleaning Processed/yr	Solvent Use L/yr	No. of Plants	Kg of Dry Cleaning Processed/yr	Solvent Use L/yr	Dry Cleaning Plants #	Dry Cleaning Plants % ‡	Annual Quantity of Dry Cleaning Processed (kg)	Annual Quantity of Dry Cleaning Processed %	Annual Solvent Purchases L
Transfer														
Perchloroethylene	33	752,000	67,000	35	2,518,000	624,000	15	1,992,000	85,000	83	53	5,262,000	40.5	776,000
Petroleum Solvent	10	125,100	42,000	4	270,000	75,000	3	2,131,000	795,000	17	11	2,526,100	19.5	912,000
													60.0	
Hot														
Perchloroethylene	22	437,000	29,000	18	917,000	49,000	16	3,037,000	190,000	56	35	4,391,000	33.8	268,000
Refrigerated														
Perchloroethylene	4	74,000	2,000	11	557,000	14,000	1	136,000	9,000	16	10	787,000	6.1	25,000
Fluorocarbon	1	22,000	800 kg	-	-	-	-	-	-	1	0.6	22,000	0.1	800 kg
OVERALL TOTAL:												12,988,100	100	

‡ - Percentage based on total number of plants (158) responding to questionaire.

TABLE 4.7 SOLVENT USAGE BY PROCESSING TECHNOLOGY AND SIZE FOR DRY CLEANING ESTABLISHMENTS SURVEYED

PROCESSING TECHNOLOGY	SIZE DISTRIBUTION: Small			Medium			Large		
	No. of Plants	Solvent Usage L/1000 kg (lbs/gal) Avg.	Range	No. of Plants	Solvent Usage L/1000 kg (lbs/gal) Avg.	Range	No. of Plants	Solvent Usage L/1000 kg (lbs/gal) Avg.	Range
TRANSFER									
o Perchloroethylene	33	100 (100)	29-242 (41-345)	35	87 (115)	33-401 (25-303)	15	38 (263)	30-44 (227-333)
o Petroleum Solvent	10	422 (24)	84-1114 (9-119)	4	280 (36)	129-455 (22-78)	3	332 (30)	273-392 (26-37)
HOT	22	39 (256)	17-209 (48-588)	18	49 (204)	17-94 (106-588)	16	42 (238)	17-92 (109-588)
REFRIGERATED	4	29 (345)	8-59 (169-1250)	11	23 (435)	6-74 (135-1667)	1	67 (149)	-

TABLE 4.8 DISTRIBUTION OF DRY CLEANING ESTABLISHMENTS SURVEYED BY SOLVENT CONDITIONING/RECOVERY TECHNOLOGY AND SIZE PERCHLOROETHYLENE PLANTS

Technology	Size Distribution						Dry Cleaning Plants		No. of Units In Use
	Small		Medium		Large				
	#	% 1	#	% 2	#	% 3	#	% 4	
Solvent Conditioning:									
o Distillation Units:	40	75	60	100	30	83	130	88	170
o Diatomaceous Earth Filtration:	4	8	5	8	7	19	16	11	18
o Cartridge Filters:	47	89	55	92	34	94	136	136	91
Standard - Carbon Core	39	74	29	48	21	58	89	60	75746
- All Carbon	12	23	28	47	19	53	59	40	1446
- Paper	6	11	6	10	-	-	12	8	389
Jumbo - Carbon Core	5	9	24	40	6	17	35	23	3957
- All Carbon	7	13	11	18	1	3	19	13	340
- Paper	-	-	1	2	-	-	1	0.7	47
- Adsorptive	12	23	4	7	18	50	34	23	1074
Solvent Recovery:									
o Solvent Reclaim Tumblers:	36	68	26	43	31	86	93	59	135
o Cartridges:									
- No Recovery	19	38	16	29	1	3	36	27 5	2180 6
- Drain	9	18	1	2	1	3	11	8	788
- Tumbler Dry	4	8	1	2	1	3	6	4	481
- Cabinet/Sniffer	12	24	19	35	25	81	56	41	8847
- Drain Plus Steam Strip	2	4	3	5	3	10	8	6	1283
- Cab/Sniffer Plus Steam Strip	4	8	15	27	-	-	19	14	1248

Note:
1 - % based on total number of small plants (53) using perchloroethylene
2 - % based on total number of medium plants (60) using perchloroethylene
3 - % based on total number of large plants (36) using perchloroethylene
4 - % based on total number of plants (149) using perchloroethylene
5 - % based on total number of plants using cartridge filters
6 - Total indicates number of cartridges used yearly

TABLE 4.9 DISTRIBUTION OF DRY CLEANING ESTABLISHMENTS SURVEYED BY SOLVENT CONDITIONING/RECOVERY TECHNOLOGY AND SIZE PETROLEUM SOLVENT PLANTS

Technology	Size Distribution						Dry Cleaning Plants		No. Of Units In Use
	Small		Medium		Large				
	#	% [1]	#	% [2]	#	% [3]	#	% [4]	
Solvent Conditioning:									
o Distillation Units:	5	63	3	75	2	40	10	59	12
o Diatomaceous Earth Filtration:	3	38	1	25	1	20	5	29	15
o Cartridge Filters:	8	100	4	100	3	60	15	88	
Standard - Carbon Core	4	50	1	25	-	-	5	29	3026[6]
- All Carbon	2	25	1	25	1	20	4	24	1047
- Paper	-	-	-	-	1	20	1	6	1000
Jumbo - Carbon Core	1	13	1	25	2	40	4	24	339
- All Carbon	1	13	-	-	1	20	2	12	45
- Paper	-	-	-	-	1	20	1	6	142
- Adsorptive	2	25	2	50	1	20	5	29	239
Solvent Recovery:									
o Solvent Reclaim Tumblers:	-	-	2	50	1	20	3	18	5
o Cartridges:									
- No Recovery	7	88	2	50	2	67	11	73[5]	2676[6]
- Drain	1	12	1	25	-	-	2	13.5	142
- Tumbler Dry	-	-	-	-	-	-	-	-	-
- Cabinet/Sniffer			1	25	1	33	2	13.5	296
- Steam Strip	-	-	-	-	-	-	-	-	-
- Cab/Sniffer Plus Steam Strip	-	-			-	-			

Note:
1 - % based on total number of small plants (8) using petroleum solvent
2 - % based on total number of medium plants (4) using petroleum solvent
3 - % based on total number of large plants (5) using petroleum solvent
4 - % based on total number of plants (17) using petroleum solvent
5 - % based on total number of plants using cartridge filters
6 - Total indicates number of cartridges used yearly

4.3.2.3 Distribution by Solvent Conditioning/Recovery Technology

Tables 4.8 and 4.9 give the distribution of dry cleaning establishments by solvent conditioning/recovery technology and size for perchloroethylene plants and petroleum solvent plants, respectively.

Perchloroethylene

The majority of the plants which use perchloroethylene operate both distillation units and cartridge filters. Eighty-eight percent of the perc plants use stills, with 170 units used by 130 plants. Cartridge filters are used in 91% of the plants, with the standard size carbon core filter the most frequently used type. The first column in the table indicates the number of dry cleaning plants which use a particular technology. In the case of cartridge filters, the total number of plants using cartridges is not equal to the sum of the number of plants using a particular cartridge type. This is because some plants may use up to 3 types of cartridges in their operations. Diatomaceous earth filtration is used in only 16 of the perchloroethylene plants surveyed, corresponding to 11% of the total plants. The largest percentage of diatomaceous earth filters are operated in large plants, where 19% utilize this filter type for solvent conditioning. There is a higher percentage in the large plants since one major chain, which runs a number of large plants, uses diatomaceous earth filters in many of its dry cleaning establishments.

Solvent recovery from spent cartridges containing perchloroethylene is most commonly done using a cabinet/sniffer arrangement. Forty-one percent of the plants surveyed used this recovery method, which consists of placing the cartridges in an enclosed cabinet which is hooked up to a carbon adsorber. Hot air is forced through the cabinet and subsequently to the "sniffer" which adsorbs the perchloroethylene from the air. Cartridges are generally left in the cabinet for an average 5 to 7 days.

Twenty-seven percent of the perchloroethylene plants which use cartridge filters do not practice any form of recovery of solvent from the filters. The cartridges are removed from the filter housing and disposed of directly the municipal refuse. It is surprising that so many plants follow this procedure when allowing the cartridges to drain for 24 hours could recover several litres per cartridge of solvent, with no additional equipment being required. Only 8% of the plants recover perchloroethylene by draining the cartridge.

Twenty percent of the plants practice steam-stripping of the cartridges, which is considered to be the best method to remove the maximum amount of perchloroethylene in the shortest span of time. Cartridges are either first drained or placed in a cabinet/sniffer arrangement prior to being steam-stripped.

The recovery of perchloroethylene by drying the filter cartridges in the tumbler is only practiced in 4% of the plants utilizing filters. Most of the small plants which use cartridge filters, totalling 38%, practice no recovery of perchloroethylene from the filters. This percentage drops as the size of the plant increases - only 3% of the large plants practice no solvent recovery. This is likely due to the fact that most large plants are more aware of the economics involved in solvent recovery, and would generally run a more efficient operation than a small plant, as was clearly indicated in Table 4.7 on solvent usage by plant size.

Petroleum Solvent

Only 53% of the petroleum solvent plants use distillation units. All the medium-sized plants surveyed had stills, whereas only 20% of the large and 38% of the small plants had distillation systems. As mentioned in Section 3.0, petroleum solvent plants require vacuum distillation units which are more expensive than the counterpart stills used in perchloroethylene plants. Due to this fact, many operators of petroleum plants forego the distillation of the solvent.

Diatomaceous earth filtration is used more frequently in petroleum plants than in perchloroethylene plants. Most petroleum solvent plants tend to be older establishments, and diatomaceous earth filters were commonly used in such plants. The newer perc plants would tend to use cartridge filters before selecting the use of diatomaceous earth filtration. In addition, diatomaceous earth filters can no longer be bought as individual free standing units in North America. These filters can only be bought as part of a refrigerated unit.

Cartridge filters, however, are the predominant form of filtration used in petroleum solvent plants, as was the case with perchloroethylene plants. Jumbo adsorptive filters and standard carbon-core filters are used by 29% of the petroleum plants, while the use of standard all-carbon and Jumbo carbon-core filters followed closely at 24%. This represents a different distribution than that seen in perchloroethylene plants, where twice as many dry cleaners used standard carbon core over jumbo carbon core and jumbo adsorptive cartridges.

Seventy-three percent of the petroleum plants using filter cartridges practice no recovery of solvent from the filters. Since petroleum solvent is relatively inexpensive, dry cleaners will not go to much effort to recover any solvent. The only other two recovery methods practiced by the dry cleaners surveyed were draining of the cartridges, and recovery through a cabinet/sniffer.

Only 18% of the plants using petroleum solvent use reclaiming tumblers. Most plants use conventional type tumblers which simply vent outside the building.

Table 4.10 gives a more detailed breakdown of solvent conditioning technologies by solvent use, size and type of processing technology employed, versus the amount of dry cleaning processed. It should be noted that the figures presented in Table 4.10 on the number of plants per category will not necessarily total those as given previously in Tables 4.8 and 4.9. In Table 4.10, one plant may be included in up to 3 different categories, depending on the different types of processing technology used within the plant. In addition, plants using more than one type of processing technology which are also listed as large establishments in Tables 4.8 and 4.9, may be classified as small or medium-sized plants when broken down by individual processing technologies.

The annual quantity of cleaning processed presented in Table 4.10 will not total 12,988,100 kg as it does in Table 4.6. This is due to the fact that for some plants, quantities may be counted twice if 2 different types of solvent conditioning methods are practiced.

4.3.3 Distribution by Waste Generation

Perchloroethylene plants and petroleum solvent plants can produce up to three types of waste each, depending on the type of plant operations employed. These wastes include still bottom residues from solvent distillation, spent cartridge filters, and filter muck from diatomaceous earth filtration. Dry cleaners utilizing fluorocarbons can potentially generate only two types of wastes - still bottom sludges and spent cartridge filters. However, the quantities of fluorocarbon wastes generated in Ontario are very small due to the limited number of operations using this type of cleaning solvent.

4.3.3.1 Still Bottom Sludges

Table 4.11 lists the quantity of still bottom sludges disposed of annually by the dry cleaners surveyed, along with the disposal method used.

The majority of the dry cleaners surveyed store the still bottoms on-site in 45 gallon drums until a number of these containers have accumulated. The sludge is then submitted for off-site redistillation and recovery of solvent. Ninety-nine percent of the sludge containing perchloroethylene is disposed of in this manner. This is equivalent to 208,300 kg of sludge per year.

In some cases, however, the nature of the material (black, oily sludge) may lead to the "easiest" solution of disposal with the plant refuse, especially in smaller plants where quantities produced are not excessive. Overall, less than 1% of the plants surveyed disposed of still bottoms in this manner. However, 13% of the small plants use this method, while no large plants disposed of sludges to the refuse. One medium-sized plant is stockpiling the still bottom sludges until a disposal method is decided upon.

The majority of sludges from petroleum solvent plants (97%) are hauled to industrial landfill sites for disposal, while 2% dump their sludges into regular municipal refuse. Again, the smaller establishments tend to be more likely to dispose of their sludges into the municipal refuse than larger plants would be. Two plants, generating 1% of the total quantity of petroleum solvent sludges, are currently stockpiling their still bottoms until a decision is reached on how to ultimately dispose of their wastes.

TABLE 4.10

DISTRIBUTION OF SOLVENT CONDITIONING TECHNOLOGY IN DRY CLEANING ESTABLISHMENTS SURVEYED BY PROCESSING TECHNOLOGY, SOLVENT USE AND SIZE

	SIZE DISTRIBUTION													
	SMALL			MEDIUM			LARGE							
	No. of Plants	Kg of Dry Cleaning Processed/yr	Solvent Use L/yr	No. of Plants	Kg of Dry Cleaning Processed/yr	Solvent Use L/yr	No. of Plants	Kg of Dry Cleaning Processed/yr	Annual Solvent Use L/yr	Dry Cleaning Plants #	Dry Cleaning Plants %[1]	Quantity Dry Cleaning (kg)	Quantity Dry Cleaning %[2]	Solvent Use L/yr
Transfer														
o Perchloroethylene:														
- Diatomaceous Earth Filtration	3	68,000	6,000	1	41,000	2,000	5	637,000	27,000	9	6	746,000	6	35,000
- Distillation Units	23	628,000	55,000	34	2,436,000	621,000	14	1,900,000	83,000	71	45	4,964,000	38	759,000
- Cartridge Filters	30	684,000	60,000	34	2,477,000	622,000	10	1,491,000	65,000	74	47	4,652,000	36	747,000
o Petroleum:														
- Diatomaceous Earth Filtration	3	28,000	18,000	1	68,000	23,000	1	1,742,000	682,000	5	3	1,838,000	14	723,000
- Distillation Units	5	71,000	28,000	3	225,000	65,000	2	2,000,000	752,000	10	6	2,296,000	18	845,000
- Cartridge Filters	8	105,000	33,000	4	271,000	75,000	3	2,131,000	796,000	15	10	2,507,000	19	904,000
Hot														
o Perchloroethylene:														
- Diatomaceous Earth Filteration	1	22,000	1,000	2	114,000	5,000	2	331,000	15,000	5	3	467,000	4	21,000
- Distillation Units	18	366,000	25,000	18	917,000	49,000	16	3,037,000	190,000	52	33	4,320,000	33	264,000
- Cartridge Filters	19	375,000	26,000	15	721,000	35,000	14	2,097,000	156,000	48	30	3,193,000	25	217,000
Refrigerated														
o Perchloroethylene:														
- Diatomaceous Earth Filtration	-	-	-	2	128,000	1,000	-	-	-	2	1	128,000	1	1,000
- Distillation Units	3	65,000	2,000	9	449,000	13,000	1	136,000	9,000	13	8	650,000	5	24,000
- Cartridge Filters	4	73,000	2,000	8	390,000	11,000	1	136,000	9,000	13	8	599,000	5	22,000

[1] Percentage based on total number of plants (158) responding to questionaire.
[2] Percentage based on total quantity of dry cleaning processed by plants responding to questionaire (Table 4.3 = 12,988,100 kg/yr).

TABLE 4.11

QUANTITY OF STILL BOTTOM SLUDGES DISPOSED OF YEARLY BY DRY CLEANING ESTABLISHMENTS SURVEYED

Processing Technology	SIZE DISTRIBUTION SMALL No. of Plants	SMALL Quantity (kg/yr)	SMALL Disposal Method	MEDIUM No. of Plants	MEDIUM Quantity (kg/yr)	MEDIUM Disposal Method	LARGE No. of Plants	LARGE Quantity (kg/yr)	LARGE Disposal Method	Total No. of Plants	Total Quantity (kg/yr)	Disposal Method
Perchloroethylene												
Transfer	11	2,200	recyclers	31	61,800	recyclers	14	23,600	recyclers	56	87,600	recyclers
	1	300	refuse	1	300	refuse				2	600	refuse
				1	600	stockpiling				1	600	stockpiling
Hot	13	4,500	recyclers	6	8,700	recyclers14	14	98,200	recyclers	32	111,400	recyclers
	2	800	refuse	1	300	refuse				3	1,100	refuse
Refrigerated	3	1,000	recyclers	10	5,200	recyclers	1	3,100	recyclers	14	9,300	recyclers
TOTAL	27	7,700	recyclers	47	75,700	recyclers	29	124,900	recyclers	103	208,300	recyclers
	3	1,100	refuse	2	600	refuse		-		5	1,700	refuse
		-		1	600	stockpiling		-		1	600	stockpiling
		8,800			76,900			124,900			210,500	
Petroleum												
Transfer	1	1,300	industrial landfill		-	-	2	66,300	industrial landfill	3	67,600	industrial landfill
	2	1,000	refuse	2	500	refuse	-	-	-	4	1,400	refuse
	2	600	stockpiling	-	-	-	-	-	-	2	600	stockpiling
TOTAL	5	2,900		2	400		2	66,300				
Fluorocarbons												
Refrigerated	1	1,000	haul to U.S. for incineration	-	-	-	-	-	-	1	1,000	haul to U.S. for incineration

The one plant using fluorocarbons which responded to the survey hauls its still bottom sludges to the United States for incineration, since no such facilities are available in Ontario.

4.3.3.2 Filter Muck

The quantity of filter muck generated by the dry cleaners surveyed and the ultimate disposal method practiced is given in Table 4.12.

Cooked filter muck is most commonly disposed of with municipal refuse. Nine of the sixteen perchloroethylene plants surveyed disposed of their wastes in this manner, although this accounts for only 29% of the total quantity of cooked filter muck generated annually.

Only one major dry cleaning chain in the province has their perchloroethylene filter muck picked up by a licensed hauler who transports the wastes to a chemically secure landfill site in Sarnia. There are seven plants operating under this chain which use diatomaceous earth filtration and generate 71% of the total quantity of filter muck disposed of by plants in this survey.

Most of the filter muck generated by petroleum solvent plants comes from one large plant, which generates almost 99% of the total quantity, and disposes of its muck to the industrial landfill site. The remaining 1% of the filter muck, disposed of by 4 plants, is thrown away with regular municipal refuse.

4.3.3.3 Cartridge Filters

Table 4.13 presents the quantity of filter cartridges disposed of yearly by the dry cleaning establishments surveyed. The table gives a breakdown by cartridge size of the ultimate disposal method used.

Most perchloroethylene plants dispose of their filter cartridges with the municipal refuse. Only 5 plants have their cartridges hauled to an industrial landfill site. Of these 5 plants, 3 are small operations.

Sixty-four percent of spent cartridges containing perchloroethylene are standard size, with the carbon core cartridge the most common. The remaining 36% consist of the jumbo size, with the carbon-core cartridge again the most predominant type. As would be expected, the majority of cartridges disposed of, totalling 83%, came from the medium and large sized plants.

Of the 15 petroleum solvent plants surveyed which use cartridge filters, 13 dispose of their cartridges with the municipal refuse. This, however, only accounts for 34% of the total spent cartridge filters. There is one large plant which generates 64% of the total cartridge filters requiring disposal. Standard all-carbon and standard plain paper cartridges make up this 64%. Along with other medium size plants, this large plant has its spent cartridges hauled away to a chemically secure landfill site.

4.3.4 Concerns/Trends of the Dry cleaning Industry

There were a number of issues of concern and noticeable trends that surfaced during the evaluation of the questionnaires, and upon discussions with individuals and manufacturers/suppliers of dry cleaning equipment.

The major concern voiced by most dry cleaners is the expected cost increases associated with the extra treatment/disposal of filter cartridges that would be required if cartridges were listed as a hazardous material. Many feel that if regulations are brought in too swiftly, many small dry cleaners could not cope with the expense and would ultimately go out of business. Some plants are even discontinuing the use of cartridges and are using only stills in an attempt to avoid the problem of cartridge disposal. One dry cleaner suggested that taxes and import duties be removed from solvent reclaim equipment to make these units more affordable to the dry cleaning industry.

On the questionnaire survey, the dry cleaners were polled as to what action they would take if their waste was considerd hazardous and required special disposal methods. Approximately 42% of the dry cleaners indicated they would use industrial waste haulers, due to the convenience and ready availability of haulers. Others picked this method as the easiest, since many were confused and somewhat intimidated by the different types of equipment available on the market, and the often conflicting claims made by the manufacturers of such equipment.

Twelve percent of the dry cleaners indicated they would send their wastes to solvent recyclers, 19% said they would purchase equipment to render their wastes non-hazardous, while 17% would buy equipment which would reduce the quantity of wastes generated. The remaining 10% felt they could not handle such a financial strain and would sell or go out of business.

Many of the dry cleaners polled seemed to be more than willing to comply with any regulations set forth by the Ministry of the Environment. Most, however, wanted the exact procedures stipulated, along with the specifications as to the exact type of equipment required, so as to avoid any possible confusion that may arise by claims from different manufacturers of different equipment.

Dry cleaners who practice steam stripping of their cartridges generally feel that the filters are suitable for landfill disposal. The weight of the cartridge upon removal from the steam stripper is usually only slightly more than the weight of the cartridge new, indicating that only slight quantities of solvent would be present. One major chain is set to purchase stream stripping units for its plants, but is waiting until the final word from the MOE prior to making a final decision. Other dry cleaners who are currently using a cabinet/sniffer arrangement are also making plans to switch to stream stripping, not only to follow any regulations that may be enacted, but also to recover more perchloroethylene.

One small operator, who said he could not afford the cost of a steam stripper since he would only use it 3 times a year, is making arrangements to use the sparging unit of a larger dry cleaner in his area. With this arrangement, the smaller operator would pay a fee to the larger dry cleaner each time he required the stripping of his cartridges. In this way, both dry cleaners gain from the arrangement. There are, however, certain problems arising from this arrangement. Moving spent cartridges from one plant to another wouid require registration under Regulation 309. As well the receiver of the cartridge would then require a certificate of approval to become an operator of a waste management system under Regulation 309.

One major trend seen to be occuring in the dry cleaning industry is the increase in the use of refrigerated units. One supplier of equipment noted that approximately 85% of the dry cleaning machines sold in the past year were refrigerated. This trend is expected to continue as solvent cost increases, and there is more concern for worker health. One major spokesman for the DCLI also indicated that there is a new type of diatomaceous earth filtration unit that is currently being used in Europe, which is much more efficient and easier to use than cartridge filters. This improved filtration system could find a potential market in Ontario if cartridge filters become regulated.

4.4 Quality of Data Base

The 158 plants responding to the survey correspond to approximately 12% of the total number of dry cleaners in Ontario. As was seen in Table 4.2 in an earlier section, the proportion of responses by MOE region is approximately similar to the proportion by region for the total 1316 plants. Also, a sufficient number of responses were received for each type of processing technology, solvent use and size to give relevant information in each area. The only exception is for fluorocarbon plants where only one response was received. This was expected since there are only a few plants in Ontario which use fluorocarbon as the cleaning solvent.

Estimates determined in this study for certain items such as the total number of dry cleaning plants and the breakdown between solvent types were comparable with estimates provided by the DCLI, which confirms the validity of results obtained. Further comparisons on the breakdown by solvent type were made with a Ministry of Labour Study (1982) which indicated 10 to 15% of all Ontario dry cleaners use petroleum solvent. This correlated well with data obtained in this study indicating around 11% petroleum solvent plants.

4.5 Solvent Use

Dow Chemical of Canada Ltd. and CIL Inc. supply virtually all the perchloroethylene used in Ontario dry cleaning establishments. These two companies have the only Canadian facilities available to manufacture perchloroethylene. Dow Chemical produces perchloroethylene in Sarnia, Ontario, while all CIL Inc. solvents are formulated in

Shawinigan, Quebec. There may be small volumes of solvent (a couple of tanker cars) which are suppled by U.S. based manufacturers. However, these quantities were not quantified and would represent a very small share of the total market. The perchloroethylene is distributed to Ontario dry cleaners by seven major distributors.

Based on 1986 data provided by Dow and CIL, it was determined that a total of 2,128,000 to 2,241,000 litres a year of perchloroethylene was supplied to Ontario dry cleaners. This data should be interpreted as a reasonable indicator of solvent use rather than a precise quantity of actual use.

According to a Ministry of Labour study, 2,800,000 litres of perchloroethylene was consumed by the dry cleaning industry in 1982. The 1986 figure is somewhat less, likely due in part to an increased awareness of solvent recovery methods, including the increase in use of the refrigeration process.

Although the two main manufacturers of petroleum solvent were contacted, neither was willing to divulge volumes of solvent sold annually to dry cleaners. No actual figures of province-wide usage of petroleum solvent is therefore available. However, an estimate of usage was obtained in Chapter 6.0 using averages calculated from the questionnaire survey.

TABLE 4.12

QUANTITY OF DIATOMACEOUS EARTH FILTER MUCK DISPOSED OF YEARLY BY DRY CLEANING ESTABLISHMENTS SURVEYED

	SIZE DISTRIBUTION											
	SMALL			MEDIUM			LARGE					
	No. of Plants	Quantity (kg/yr)	Disposal Method	No. of Plants	Quantity (kg/yr)	Disposal Method	No. of Plants	Total Quantity (kg/yr)	Disposal Method	Total No. of Plants	Total Quantity (kg/yr)	Disposal Method
Perchloroethylene												
Transfer	3	700	refuse	1	100	refuse		-		4	800	refuse
		-			-		5	11,800	industrial landfill	5	11,800	industrial landfill
Hot	1	200	refuse	2	5,000	refuse		-		3	5,200	refuse
		-			-		2	5,300	industrial landfill	2	5,300	industrial landfill
Refrigerated	-			2	1,000	refuse	-					
TOTAL	4	900	refuse	5	6,100	refuse				9	7,000	refuse
							7	17,100	industrial landfill	7	17,100	industrial landfill
										16	24,100	
Petroleum Solvent												
	3	900	refuse	1	100	refuse		-				
		-			-							
		-			-		1	90,700	industrial landfill	1	90,700	industrial landfill
TOTAL	5	91,700										

TABLE 4.13

QUANTITY OF FILTER CARTRIDGES DISPOSED OF YEARLY BY DRYCLEANING ESTABLISHMENTS SURVEYED

	SIZE DISTRIBUTION															
	Small				Medium				Large							
Processing Technology	No. of Plants	# Cartridges Standard	# Cartridges Jumbo	Disposal Method	No. of Plants	# Cartridges Standard	# Cartridges Jumbo	Disposal Method	No. of Plants	# Cartridges Standard	# Cartridges Jumbo	Disposal Method	Total No. Plants	# Cartridges Standard	# Cartridges Jumbo	Disposal Method
Perchloroethylene																
Transfer	27	980	310	Refuse	32	1,545	3,085	Refuse	10	2,345	600	Refuse	69	4,870	3,995	Refuse
	1	100	-	Industrial Landfill									1	100	-	Industrial Landfill
Hot	15	680	105	Refuse	15	740	145	Refuse	15	2,150	715	Refuse	45	3,570	965	Refuse
	2	80	-	Industrial Landfill				Landfill	1	-	190	Industrial Landfill	3	80	965	Industrial Landfill
Refrigerated	2	225	50	Refuse	7	430	65	Refuse	1	50	160	Refuse	10	705	275	Refuse
	1	85	-	Industrial Landfill					1	85	-	Industrial Landfill	1	85	-	Industrial Landfill
TOTAL	44	1,885	465	Refuse	54	2,715	3,295	Refuse	33	4,545	1,475	Refuse	131	9,145	5,325	Refuse
	3	180	-	Industrial Landfill	1	85	-	Industrial Landfill	1	-	190	Industrial Landfill	5	265	190	Industrial Landfill
	47	2,065	465		55	2,800	3,295		34	4,545	1,665		136	9,410	5,425	
Petroleum Solvent																
Transfer	8	200	90	Refuse	3	145	200	Refuse	2	-	430	Refuse	13	345	720	Refuse
					1	-	50	Industrial Landfill	1	2000	-	Industrial Landfill	2	2000	50	Industrial Landfill
TOTAL													15	2,345	770	

5.0 WASTE CHARACTERIZATION

5.1 Selection of Plants for Sampling

Representative dry cleaners were visited to observe the usage of perchloroethylene and/or petroleum solvent, and to determine solvent quantities, operating characteristics, disposal practices, and to obtain samples of wastes generated. A total of 14 plants were initially selected to be sampled. The focus of sampling was primarily on hot and transfer technology using perchloroethylene, which predominate in the industry, with sufficient plants using other technologies to be representative, as indicated below:

- Hot and transfer processing with perchloroethylene - 11 plants were sampled with a fairly equal distribution between hot and transfer; and small, medium and large plants;

- Transfer processing with petroleum solvent - 3 plants

- Refrigerated processing with perchloroethylene - 3 plants

Three of the plants sampled used two or all three of the different types of processing technology available.

Plants were also selected to cover the different forms of solvent conditioning/recovery (stills, cartridge filters and diatomaceous earth filters), as well as the different types of methods used for solvent recovery from cartridges.

In addition to the 14 plants sampled initially, 2 extra dry cleaners, both large, hot, perchloroethylene plants, were included in the sampling program at a later date. One of these additional plants dry cleans strictly industrial wear (mainly gloves), and only operates distillation units, with no filtration. The other plant, which operates a sparging unit for the steam-stripping of filter cartidges, was chosen to run a stripping test at exact manufacturer's operating specifications, to determine the maximum amount of solvent that could be removed via the process.

Table 5.1 lists the 16 plants sampled, indicating the type of technology used in the operations of dry cleaning and solvent conditioning/recovery, as well as the plant size and quantity of dry cleaning processed.

5.2 Sampling and Analytical Protocols

5.2.1 Sampling

Upon collection, waste samples from dry cleaning establishments were returned to the laboratory and weighed immediately. Prior to analysis, samples were weighed again to determine if any losses had occurred during storage. Although in most cases there was a lag time of a couple of weeks between collection and analysis, no losses of solvent were apparent.

Samples were taken of still bottom sludges, filter muck and spent cartridges where available. In some cases, only still bottom sludges were available for sampling, since the filter cartridges were still being used and were not scheduled to be changed for some time. When possible, sampling was scheduled around the removal of cartridges, since this was a relatively infrequent occurrence. Distillation and filtration through a diatomaceous earth filter are conducted on a much more frequent basis, and samples of these wastes were therefore readily available at any time.

Samples were collected in glass bottles, sealed with tape, and refrigerated until extraction. Still bottom sludges and cooked filter muck were placed directly in the sample containers at the sampling location. Cartridge filters, however, were returned to the laboratory, and the total cartridge weight was determined prior to the disassembly of the filter to obtain separate samples of the paper and the absorbent material.

Fresh samples of still bottom sludges and filter muck were taken where possible, instead of taking samples from drums which may have been sitting for awhile, with probable losses of solvent. Sludges were first well-mixed to obtain representative samples.

A second sample of sludge was taken at one plant approximately 3 weeks after the first sampling date. This was to allow for an estimate of in-plant variability. Thus both plant-to-plant variations and in-plant variations were determined.

TABLE 5.1

SUMMARY OF OPERATING CHARACTERISTICS FOR DRY CLEANING PLANTS SAMPLED

Plant Code	Processing Technology	Solvent Type [1]	Plant Size	Annual Dry Cleaning Processed (kg/yr)	Annual Solvent Purchases (L/yr)	Solvent Mileage (L/1,000 kg)	SOLVENT CONDITIONING TECHNOLOGY: Distillation Units	SOLVENT CONDITIONING TECHNOLOGY: Diatomaceous Earth Filters	SOLVENT CONDITIONING TECHNOLOGY: Cartridge Type*	SOLVENT RECOVERY: Solvent Reclaim Tumblers	SOLVENT RECOVERY: Carbon Adsorber	SOLVENT RECOVERY: Solvent Recovery from Cartridges**
1	Refrigerated	Perc	S	21,800	460	21	1	0	JCC	0	0	NR
2	Hot	Perc	S	15,000	460	31	1	0	SCC, SAC	0	0	D (24 hours)
3	Hot	Perc	S	21,800	1,400	64	0	1	0	0	0	-
	Transfer	P.S.	S	10,900	4,500	413	1	1	0	0	0	-
4	Transfer	Perc	S	19,600	700	35	1	0	JCC	1	1	C/S (3 weeks)
	Hot	Perc	S	10,300	200	22	1	0	JAd	0	-	C/S (3 weeks)
5	Refrigerated	Perc	M	87,100	500	6	0	1	0	0	0	-
6	Transfer	Perc	M	54,400	5,500	100	1	0	SCC, SAC	2	1	SS
7	Transfer	Perc	M	58,500	3,800	64	2	0	SPP, SCC, SAC	2	2	SS (2 days)
8	Hot	Perc	M	53,300	900	17	3	0	SCC, SAC	0	0	SS (8 hours)
9	Transfer	Perc	L	130,600	5,500	42	1	0	JCC, JAC	1	1	C/S (1 week)
10	Hot	Perc	L	163,300	2,700	17	1	0	SCC	0	0	D (1 day)
11	Transfer	P.S.	L	131,000	43,100	331	0	0	JCC, JAC, JAd	0	0	NR
12	Refrigerated	Perc	M	51,200	1,600	31	1	0	SCC, JAd	0	0	T (4 hours)
	Hot	Perc	L	108,900	10,000	92	1	0	0	2	0	
	Transfer	P.S.	S	19,600	3,400	172	0	0	JAd	0	0	NR
13	Hot	Perc	L	185,000	3,200	17	1	0	SCC	0	1	C/S (1 week)
14	Transfer	Perc	L	130,600	5,300	41	0	1	0	1	1	-
15	Hot	Perc	L	832,000	23,500	28	4	0	0	2	2	-
16	Hot	Perc	L	436,400	14,500	33	5	0	SCC	2	2	SS (8 hours)

Plant Size: S = small plant (less than 36,000 kg of dry cleaning processed a year)
M = medium plant (36,000 kg to 90,000 kg of dry cleaning processed a year)
L = large plant (more than 90,000 kg of dry cleaning processed a year)

1 Perc = Perchloroethylene; P.S. = Petroleum Solvent
* Cartridge Types: S = Standard; CC = Carbon Core; PP = Plain Paper; J = Jumbo; AC = All Carbon; Ad = Adsorptive (clay and carbon)
** Solvent Recovery from Cartridges: NR = No Recovery; D = Drain; T = Tumbler Dry; C/S = Cabinet Sniffer; SS = Steam Strip.

5.2.2 Analytical Protocols

5.2.2.1 Sorbent (Charcoal and Clay)

Perchloroethylene and Petroleum Solvent

A small portion (50 mg) of the total sample collected from each cartridge was placed in a small septum cap vial with carbon disulphide for extraction and subsequent analysis. After extraction in the vial, the extract was analyzed by GC equipped with an FID detector. Specific analytical conditions are presented in Appendix 3. The method as used, was an adaptation of a method obtained from the International Fabricare Institute (IFI) (see also Appendix 3).

5.2.2.2 Filter Papers

Perchloroethylene and Petroleum Solvent

The method for the extraction and analysis of perchloroethylene and petroleum solvent in cartridge papers was also adapted from a method obtained from IFI. A representative portion of filter paper was extracted for 4 hours in a standard Soxhlet extractor with dichloromethane. Analysis of the extract was by GC equipped with an FID detector. Details of the method are presented in Appendix 3.

5.3 Cartridge Composition

Tables 5.2 and 5.3 list the solvent content on a percent basis and weight basis, respectively, found in filter cartridges obtained from the plants sampled.

The values in Table 5.2 for the percentage of solvent in the carbon and the paper were obtained directly by analysis. The figure for the overall percentage of perchloroethylene in the filter (weight of solvent per the total weight of the cartridge) was calculated by determining the percentage by weight of each filter component (i.e., paper and carbon/clay), and multiplying this figure by the percentage of solvent found in that compartment.

TABLE 5.2

SOLVENT CONTENT OF CARTRIDGES FOR DRY CLEANING PLANTS SAMPLED (% basis)

			CARTRIDGE TYPE (% wt/wt)									
			STANDARD					JUMBO				
			Carbon Core			Plain Paper		Carbon Core			Adsorptive	
Processing Technology		Recovery Technology	Carbon[1]	Paper[2]	Total[3]	Paper	Total	Carbon	Paper	Total	Car/Clay	Paper	Total
Perchloroethylene													
Transfer:	Small	Cab/Sniffer, 3 Weeks	-	-	-	-	-	10.0	0.74	6.6	13.0	0.73	8.5
	Medium	Steam Strip	16.0	1.0	5.14	-	-	-	-	-	-	-	-
	Medium	Steam Strip, 2 Days	-	-	-	0.33	0.27	-	-	-	-	-	-
	Large	Cab/Sniffer, 1 Week	-	-	-	-	-	42.0	1.3	27.4	-	-	-
Hot:	Large	Overnight Drain	47.0	1.0*	16.89	-	-	-	-	-	-	-	-
	Large	Cab/Sniffer, 1 Week	25.0	0.25	7.38	-	-	-	-	-	-	-	-
	Large	Steam Strip, 8 Hours	4.0	0.0065	1.16	-	-	-	-	-	-	-	-
Petroleum Solvent													
Transfer:	Small	No Recovery	-	-	-	-	-	-	-	-	41.4	31.0	29.7
	Large	No Recovery	-	-	-	-	-	-	-	-	17.7	30.0	13.2

1 Weight of solvent/weight of carbon.

2 Weight of solvent/weight of paper.

3 Weight of solvent/total weight of cartridge.

* Solvent content in paper assumed as 1%.

TABLE 5.3 SOLVENT CONTENT (KG) OF CARTRIDGES FOR DRY CLEANING PLANTS SAMPLED

Processing Technology		Recovery Technology	CARTRIDGE TYPE			
			Standard		Jumbo	
			Carbon Core	Plain Paper	Carbon Core	Adsorp-tive
Perchloroethylene:						
Transfer	- Small	Cab/Sniffer 3 weeks	-	-	1.4 (21.0)	2.2 (25.7)
	- Medium	Steam Strip	0.25 (4.8)*	-	-	-
	- Medium	Steam Strip 2 days	-	0.01 (3.6)	-	-
	- Large	Cab/Sniffer 1 week	-	-	7.1 (25.9)	-
Hot	- Large	Overnight Drain	0.93 (5.5)	-	-	-
	- Large	Cab/Sniffer 1 week	0.36 (4.9)	-	-	-
	- Large	Steam Strip 8 hours	0.06 (5.0)	-	-	-
Petroleum Solvent:						
Transfer	- Small	No Recovery	-	-	-	8.2 (27.5)
	- Large	No Recovery	-	-	-	3.1 (23.4)

* - Value In Brackets Represents The Weight Of The Total Cartridge On Disposal

The values for the mass of solvent found in each cartridge (Table 5.3) were calculated by taking the figure for the overall percentage of solvent in the cartridge and multiplying this number by the disposal weight of the cartridge.

5.3.1 Perchloroethylene

Based on the results indicated in these tables, steam stripping, conducted following the exact manufacturers specifications on operation, leads to the lowest concentration of perchloroethylene in the carbon, and hence the overall filter. The overall concentration of perchloroethylene in the standard size carbon core cartridge filter which was steam stripped was 1.16%. Another carbon-core cartridge which was also steam-stripped, however, contained a higher concentration of perchloroethylene, 5.14%. The exact length of time and operating procedure (e.g., value of steam pressure system run at) for this cartridge was unknown. Consequently a direct comparison to results obtained from the cartridge steam-stripped at manufacturers specification is not possible.

The standard carbon-core cartridge which was placed in a cabinet/sniffer arrangement contained overall perchloroethylene levels of 7.38%, which is halfway between those obtained from a steam-stripped cartridge and a cartridge which was drained overnight (16.9%). The standard plain paper cartridge contained very little perchloroethylene, only 0.27%, since perchloroethylene is removed fairly easily from paper. In most cases, the perchloroethylene content of the paper, for both jumbo and standard size cartridges, was less than 1%.

The two jumbo cartridges, which had been in a cabinet/sniffer for 3 weeks, were analyzed to contain 10% (for the Jumbo Carbon Core) and 13% (for the Jumbo Adsorptive) perchloroethylene in the absorbent layer, giving an overall value of 6.6% and 8.5%, respectively. However, another jumbo carbon-core cartridge which was also stripped in a cabinet/sniffer but only for 1 week, had 42% solvent in the carbon. This is only slightly less than the 47% contained in the carbon of the filter which was just drained overnight. The cartridge containing 42% perc in the carbon was used for 700 kg of processing, while the one containing 10% perc was only used for 50 kg of dry cleaning. This meant that a substantially larger volume of solvent was filtered through the first cartridge, providing a greater opportunity for the perchloroethylene content to build up in the carbon.

Another standard cartridge, which was also in a cabinet/sniffer for one week, had a value of 25% perchloroethylene in the carbon. This indicates how variable results may be, depending on how the operation is run, with no real correlation between processing technology and efficiency of recovery of solvent from the cartridge. Maximum recovery is more dependent on how well a system is run as specified by manufacturers, rather than on the size of the plant or type of processing used.

One dry cleaner submitted his cartridge to be analyzed independent of the sampling program conducted by BEAK. The results of this analysis are not included in Tables 5.2 and 5.3. This standard carbon-core cartridge had been sitting in a cabinet/sniffer for 2 to 3 months. The operator allowed the spent cartridges to remain in the cabinet until the next set of cartridges were changed and required recovery. From the analytical testing, it was determined that 5.2% perchloroethylene was present in the carbon. Assuming a level of 1% perchloroethylene in the paper, the overall amount of perchloroethylene in the cartridge would be 2.0%. As the level of perchloroethylene in the paper will likely be much less than 1.0%, this brings the overall amount to slightly less than 2.0%, which would be only slightly more than values found in steam-stripped cartridges run at manufacturers specifications.

The International Fabricare Institute (IFI) recently conducted a study to determine how much perchloroethylene could be removed from spent cartridges by several of the methods mentioned earlier (IFI, 1986). These results are presented in Table 5.4. The recovery methods used were either recommended by the manufacturer/distributor of the equipment or were conceived by the plant owner. Since dry cleaners had complete control over the amount of time the cartridge was processed, the results shown may be lower or higher than those achieved "on average".

The methods examined to recover perchloroethylene included placing the cartridge in the dry cleaning wheel, lint trap, or still, as well as cooking the cartridge in its original filter tube. Again, a large variability in results can be seen. The lowest overall value measured was 2.11% for a cartridge steam stripped in a still with steam sweep. The suppliers and manufacturers of these systems claim that steam-stripping can reduce the overall perchloroethylene level to only 0.2% on a weight basis, with 0.4% of the perchloroethylene in the carbon and 0.02% in the paper, based on tests run on "clean" cartridges which had been soaked in solvent. These claims have not been substantiated

TABLE 5.4 VALUES REPORTED FOR PERCHLOROETHYLENE IN CARTRIDGES TREATED BY DIFFERENT METHODS

Method	Time Spent	Cartridge Type	Avg. % of Perc in Carbon (wt/wt)	Avg. % of Perc in Paper (wt/wt)	Total Avg. % in Cartridges (wt/wt)
Dry Heat					
Drying in Housing	24 hrs	Standard	9.95	0.079	2.90
Drying in Lint Trap	1 wk	Standard	16.31	0.350	4.91
Drying in Dry Cleaning Units	4.5 hrs	Standard	42.33	32.31	35.17
Drying in Distillation Unit	8 hrs	Standard	51.94	6.75	19.66
Live Steam					
Cooked in Housing	5 hrs	Adsorptive	3.86	0.007	3.55
Still with Steam Sweep	5 hrs	Adsorptive	2.29	0.089	2.11
Still with Steam Injection System	6 hrs	Standard	15.88	0.815	5.11

Source: International Fabricare Institute (1986)

by results from this study, or others such as the one conducted by the IFI. A 0.2% level of perchloroethylene in the total cartridge appears to be unattainable in actual situations, but may be possible in controlled laboratory conditions.

5.3.2 Petroleum Solvent

The only type of cartridge samples obtained from petroleum solvent plants were 2 jumbo adsorptive cartridges on which no recovery of solvent had been practiced. In both cases, the amount of solvent in the paper was in the range of 30%. However, the amount in the inner adsorptive layer differed greatly from 41% in one filter, to 18% in the other. This may be due in part to the fact that the cartridge with more solvent in the carbon/clay layer was used for more than twice as much processing - 950 kg of dry cleaning/cartridge versus 450 kg of dry cleaning/cartridge.

5.3.3 Summary

All of the methods mentioned to recover solvent from cartridges provide an economic advantage to the dry cleaner, as his solvent usage is decreased with better recovery. The cartridges are also lighter and less objectionable to handle after some form of recovery has been practiced. However, it appears that about 1% perchloroethylene is the lowest concentration achievable by any of the presently used methods that remove perchloroethylene from cartridges, based on the results presented in Table 5.2 and Table 5.4.

5.4 Sludge and Filter Muck Composition

Table 5.5 presents the solvent content of still bottom sludges and cooked filter muck from the dry cleaning plants sampled.

As was apparent with filter cartridges, there can be a large variability in the values of perchloroethylene found in sludges and filter muck. Still bottom sludges were found to contain anywhere from 0.26% up to 75% perchloroethylene, while values in the filter muck ranged from 2.1% up to 56.0% perchloroethylene.

TABLE 5.5 SOLVENT CONTENT OF STILL BOTTOM SLUDGES AND FILTER MUCK FOR DRY CLEANING PLANTS SAMPLED

Processing Technology		Still Bottom Sludges (% by wt) Average	Range	Filter Muck (% by wt)
Perchloroethylene:				
Transfer	- Small	23.0	-	-
	- Medium	10.4	0.8 - 34	-
	- Large	53.0	-	2.1
Hot	- Small	64.0	-	56.0
	- Medium	8.3	-	-
	- Large	26.3	0.68 - 75	-
Refrigerated	- Small	51.0	-	-
	- Medium	0.26		15.0
Overall Average (All Samples)		28.5		24.4
Petroleum Solvent:				
Transfer	- Small	-	-	16.2

There appears to be no correlation between processing technology and losses of perchloroethylene in sludges and filter muck. The distillation process is relatively unsophisticated in terms of process control, leading to large variations in the amount of solvent losses. Results vary from plant to plant due to reasons such as differences in residue constituents, operator attention, temperature of the heating coils, as well as the cleanliness of the heating coils.

The average value of perchloroethylene in still bottom sludges and filter muck was determined to be 28.5% and 24.4% respectively. These values are similar to those obtained by the Waste Management Branch in Alberta, which found concentrations ranging from less than 1% to 68% perchloroethylene, with average values around 30% for both still bottoms and filter muck.

No still bottom sludges were available for analysis from petroleum solvent plants. A filter muck sample, however, was found to contain 16.2% by weight petroleum solvent.

IFI recently introduced a method to its members whereby the perchloroethylene content could be reduced substantially in residues, to as low as 1.0% in sludges and filter muck. This procedure is termed the "water addition" method. After the initial cooking/boil-down, water is added to still residues and cooker muck and regular distillation is continued. This procedure is followed twice for still bottom sludges and once for filter muck. In one case, one cleaner had 69.2% perchloroethylene content in the sludge after the conventional boildown. The first water addition reduced the solvent content to 15.7%, while the second addition decreased the perchloroethylene content to 1.5%. Many of the dry cleaners in the United States who have tried this method were enthusiastic about the results.

The majority of the dry cleaners in Ontario are unaware of this process, and none of the plants surveyed were found to use this method. However, this process modification appears to be unnecessary in Ontario given the high percentage of plants sending their still bottoms to recyclers. In addition,the water addition method could potentially lead to solvent quality problems (such as odours in cleaned garments) and additional technical difficulties in operation.

5.5 Summary of Waste Characteristics for Plants Sampled

Table 5.7 summarizes the characteristics of wastes generated by the plants sampled, listing the total quantity of wastes disposed of, the solvent content in each waste type, and the total solvent losses due to waste disposal.

For samples analyzed, solvent losses via waste disposal were calculated directly by taking the solvent content of the sludge or filter muck and multiplying this value by the quantity of residue disposed of. A value of 30% solvent in the still bottom sludges was assumed for plant 3, a petroleum solvent dry cleaning facility, since no testing was done on sludge from petroleum solvent plants.

The figures for solvent losses in spent cartridges were determined by using the values in Table 5.6 for the quantity of solvent per individual cartridge type, and multiplying this value by the total number of cartridges disposed of. The numbers in Table 5.6 were developed from the values given earlier in Table 5.3 for cartridges from dry cleaning plants which were sampled and analyzed. In cases where there was no analysis done on a particular cartridge type, estimated values were used. These estimates were calculated using the average analyzed values of solvent found in the carbon and paper layers of the cartridges sampled, and extrapolating these values to a particular type of cartridge. For example, no analyses were conducted on a standard all carbon cartridge (SAC), but results were obtained for a standard carbon core cartridge (SCC). Therefore, the values for the solvent content in the carbon layer of the SCC, were used and extended to the case of a SAC filter, where the cartridge is only carbon with no paper layer present.

Several assumptions were made in determining the expected average content per cartridge type. The content of perchloroethylene in the paper layer was assumed to be 1%, even though the average measured through the analytical testing was 0.6%. The solvent content in the paper is not a critical amount and 1% was chosen to be slightly conservative. The content of perchloroethylene in the carbon was calculated to average 24% in the analyzed cartridges.

One adsorptive type cartridge containing an inner annulus of carbon/clay was obtained from a perchloroethylene plant. This cartridge, which had been placed in a cabinet/ sniffer for 3 weeks, contained 13% solvent in the inner core. Since no other cartridges of

TABLE 5.6 ESTIMATED VALUES OF SOLVENT LOSSES BY FILTER CARTRIDGE TYPE

Cartridge Type		Kg of Solvent/Cartridge	
		Perchloroethylene	Petroleum Solvent
Standard	- Carbon Core	0.4	1.17*
	- All Carbon	1.6*	2.1*
	- Plain Paper	0.03	0.9*
Jumbo	- Carbon Core	3.5	5.0*
	- All Carbon	4.8*	6.0*
	- Plain Paper	0.2*	4.0*
	- Adsorptive	3.5	5.0

*Values based on analysis of cartridge samples.

TABLE 5.7

WASTE CHARACTERISTICS FROM DRY CLEANING PLANTS SAMPLED

						Waste Solvent Content (%)			Waste Quantities			Solvent Losses (kg/yr) by Wastes			Total Solvent Losses	
Plant Code	Processing Technology	Solvent Type	Plant Size	Annual Drycleaning Processed (kg/yr)	Annual Solvent Purchases (L/yr)	Still Bottom Sludges	Filter Muck	Cart.	Sludge (kg/yr)	Filter Muck (kg/yr)	Cart. No./yr	Sludges	Filter Muck	Cartridges	kg/yr	% of solvent purchased
1	Refrigerated	Perc	S	21,800	460	51.0	-	-	152	-	48(JCC)	78	-	168	246	33.0
2	Hot	Perc	S	15,000	460	64.0	-	-	102	-	8(SCC)	65 4(SAC)	-	3.2 6.4	75	10.1
3	Hot Transfer	Perc P.S.	S S	21,800 10,900	1400 4500	- -	56.0 16.2	- -	- 508	159 113	- -	- 152*	89 18	- -	89 170	4.0 5.0
4	Transfer Hot	Perc Perc	S S	19,600 10,300	700 200	23.0	-	6.6 8.5	305	-	30(JCC) 30(JAd)	70	-	42 66	178	11.9
5	Refrigerated	Perc	M	87,100	500	-	15.0	-	-	425	-	-	64	-	64	7.1
6	Transfer	Perc	M	54,400	5500	34.0		5.14	813	-	78(SCC) 24(SAC)	276		20 38	334	3.7
7	Transfer	Perc	M	58,500	3800	5.6	-	0.27	1209	-	75(SPP) 75(SCC) 10(SAC)	68	-	1 30 16	115	1.9
8	Hot	Perc	M	53,300	900	8.3	-	-	508	-	100(SCC) 20(SAC)	42	-	40 32	114	7.6
9	Transfer	Perc	L	130,600	5500	53.0	-	27.4	1524	-	90(JCC) 90(JAC)	808	-	639 432	1879	21.0
10	Hot	Perc	L	163,300	2700	75.0	-	16.89	1016	-	80(SCC)	762	-	75	837	18.7
11	Transfer	PS	L	131,000	43100	-		- 13.2	-	-	200(JCC) 25(JAC) 25(JAd)	- -	- -	1000 150 78	1228	3.8
12	Refrigerated	Perc	M	51,200	1600	0.26	-	-	1524		80(SCC) 19(JAd)	4	-	32 67	103	0.5
	Hot Transfer	Perc PS	L S	108,900 19,600	10,000 3400	0.68 -		- 29.7	3430 -	- 	 40(JAd)	23 -	-	- 328	328	13.0
13	Hot	Perc	L	185,000	3200	49.0	-	7.38	1829	-	600(SCC)	896	-	216	1112	21.2
14	Transfer	Perc	L	130,600	5300	-	2.1	-	-	735		-	15	-	15	0.2
15	Hot	Perc	L	832,000	23,500	5.3		-	-	69,949	-	3707	-	-	3707	9.6
16	Hot	Perc	L	436,400	14,500	1.4	-	1.16	5702	-	576	80	-	35	115	0.5

Plant Size: S Small Plant (Less than 36,000 kg of drycleaning processed per year)
M Medium Plant (36,000 kg to 90,000 kg of drycleaning processed per year)
L Large Plant (more than 90,000 kg of drycleaning processed per year)

* Assume solvent content of sludge 30%
** Assume solvent content in paper 10%

JCC - jumbo carbon core
SCC - standard carbon core
JAC - jumbo all-carbon
JAd - jumbo adsorptive
SPP - standard plain paper

this type were available, a more representative figure on the average perchloroethylene content could not be obtained. However, the same perchloroethylene plant also had a jumbo carbon-core cartridge analyzed, which was found to contain 10% perchloroethylene in the carbon layer. Since both cartridges followed the same processing, it appears likely that the average values of solvent found in carbon/clay would be in the same range as those found in carbon. A value of 13% perchloroethylene was thus chosen as the average solvent content in the carbon/clay layer, the same as found in a carbon layer.

The percentage of solvent for each cartridge type was then calculated using the estimated values for solvent content in the paper and the adsorbent layer. The total amount of solvent per cartridge (in kilograms) was then calculated by taking the average disposal weight of the cartridge and multiplying this number by the percentage of perchloroethylene in the whole cartridge. Disposal weights of cartridges were obtained by direct measurement in the laboratory, as well as through conversations with individual dry cleaners.

Solvent content in cartridges from petroleum solvent plants was calculated in the same way. However, the solvent content will be higher since no recovery of solvent is usually practiced. The content of petroleum solvent in the paper was assumed to be 30%, while the content in the carbon and carbon/clay core was taken as 29%, the average of the two cartridges sampled.

The last column in the table calculates the percentage of solvent used annually which is disposed of with wastes generated in the dry cleaning process. The average for perchloroethylene losses in wastes was 10.1%, although values ranged from as low as 0.2% up to a high of 33.0%. Petroleum solvent plants showed a slightly lower loss at 7.3%, with a range of 3.8 to 13.0%. Considering that recovery is not practiced by petroleum solvent plants, the lower percent loss suggests that other losses (e.g., to atmosphere or to sewers) must be higher in petroleum solvent plants than in perchloroethylene plants.

6.0 WASTE GENERATION

6.1 Extrapolation Methodology

Estimates of the quantity and solvent content of wastes generated by the total dry cleaning industry in Ontario were obtained by an extrapolation of the results compiled from the 158 plants surveyed. The distribution by technology and plant size was also determined using the data calculated in Chapter 4.0, and observations made by the DCLI.

The method of estimation used was as follows:

(1) Assume 10% of all dry cleaning plants use either petroleum solvent or fluorocarbons, while 90% use perchloroethylene. On this basis, about 1185 out of the 1316 dry cleaning establishments would use perchloroethylene as the cleaning solvent.

(2) Assume a size distribution of 80% small plants (as per DCLI), with approximately 40 large plants. From the survey, 3 large petroleum solvent plants and 33 large perchloroethylene plants were surveyed. Using this information, the following size distribution by solvent was obtained.

Perchloroethylene:	Small	-	950	plants
	Medium	-	199	plants
	Large	-	36	plants
			1185	plants
Petroleum Solvent:	Small	-	105	plants
	Medium	-	22	plants
	Large	-	4	plants
			131	plants

(3) Using the data given in Table 4.5, which presents the distribution by processing technology and size for the dry cleaning plants surveyed, a breakdown between transfer, hot and refrigerated plants was estimated as shown below.

Small Plants:	Transfer	- 60%
	Hot	- 37%
	Refrigerated	- 3%
Medium Plants:	Transfer	- 55%
	Hot	- 28%
	Refrigerated	- 17%
Large Plants:	Transfer	- 47%
	Hot	- 50%
	Refrigerated	- 3%

These three steps determined the estimated number of plants by solvent use, size and processing technology. This data is summarized in Table 6.1 and forms the basis for all other extrapolations to determine waste quantities generated.

Estimates of total waste quantities were determined by taking the average quantity of residues generated per plant by technology and plant size, and multiplying this value by the number of plants in that category. Solvent losses were obtained by taking the mean solvent concentration in residues, as determined by analysis, and multiplying by the quantity of wastes. A further breakdown into the estimated quantities generated by the six different MOE regions was accomplished using the regional plant distribution developed in Section 4.1 and the technology and size distribution given in Table 6.1.

6.2 Quantities by Technology and Plant Size

Using the extrapolation methodology outlined, estimates were made of the quantity of wastes generated by each category of plant size and processing technology, as well as corresponding solvent losses expected in each waste type.

TABLE 6.1 PROVINCE-WIDE DISTRIBUTION BY SIZE AND SOLVENT USE

Solvent	Total Number of Plants	Size Distribution: Small #	Small %	Medium #	Medium %	Large #	Large %
Perchloroethylene							
Transfer	697	570	60	110	55	17	47
Hot	426	352	37	56	28	18	50
Refrigerated	62	28	3	33	17	1	3
Sub-Total:	1185	950	100	199	100	36	100
Petroleum Solvent	131	105	80	22	17	4	3
Total	1316	1055		221		40	

Table 6.2 through 6.4 present the estimated quantities of still bottom sludge, filter muck, and spent filter cartridges generated by the dry cleaning industry province-wide. The first portion of the tables repeats the data formulated from the plants surveyed. The number of plants per each category and the percentage of plants in each section using the distillation process, and the diatomaceous earth filter or cartridge filter is documented. The quantity of solvent estimated to be lost in the waste residues, in terms of kilograms per plant per year, was calculated by taking the total quantity of waste generated by the dry cleaners surveyed, multiplying this by the average solvent content of the waste as determined analytically, and dividing by the number of plants which generated the wastes. This produces an average value for each size category and major process category, which is then multiplied by the total number of plants in the province to give the overall quantity of waste solvent losses.

Table 6.2 examines the waste solvent residues in still bottom sludges province-wide. The total quantity of solvent disposed of in sludges from perchloroethylene plants was calculated to be 181,900 kg/year. Of the 130 plants surveyed which reported the use of distillation units, only 109 provided data on the quantity of still bottom sludges produced. Consequently, the number of plants reported in Table 6.2 (109), is lower than that shown in Table 4.8 (130).

The largest quantity of solvent losses in sludges appears to be from medium-sized plants using the transfer processing technology, which generated about 58,000 kg of perchloroethylene in their waste sludges. The second highest losses occurred from the 18 large, hot plants, which produced 36,000 kg of waste solvent. A large proportion of this 36,000 kg of solvent losses was produced by 2 to 3 very large plants which generated substantially more sludge than some of the other large, hot dry cleaning establishments. However, as noted by the DCLI, solvent losses on a tonnage basis (ie, slovent losses per kg of dry cleaning processed) should be consistent for different technologies.

The next highest producer of waste solvent volumes was the category of small, hot dry cleaning plants, which disposed of almost 29,000 kg of solvent in their waste sludges. Although the number of plants included in this category is much larger than the number of large hot, plants (289 vs 18), the total quantity of waste solvent disposed of was less due to the lower mean value of losses per plant, 2000 kg/plant/yr for large, hot plants versus 100 kg/plant/yr for small, hot plants.

TABLE 6.2

ESTIMATED WASTE SOLVENT RESIDUES IN STILL BOTTOM SLUDGES FOR THE TOTAL ONTARIO DRY CLEANING INDUSTRY

SIZE	PROCESS	SURVEY RESULTS*					PROVINCE-WIDE		
		No. of Plants	%	Quantity of Sludge (kg/yr)	Quantity of Solvent in Sludge*** (kg/yr)	Quantity of Solvent in Sludge*** (kg/plant·yr)	Totals of Plants	No. of Plants Using Stills**	Solvent Losses in Sludge (kg/yr)
Perchloroethylene									
Small	Transfer	12	70	2,500	715	60	570	399	23,900
	Hot	15	82	5,300	1,510	100	352	289	28,900
	Refrigerated	3	75	1,000	285	95	28	21	2,000
Medium	Transfer	33	97	62,700	17,870	540	110	107	58,000
	Hot	7	100	9,000	2,565	365	56	56	20,500
	Refrigerated	10	82	5,200	1,480	150	33	27	4,000
Large	Transfer	14	93	23,600	6,725	480	17	16	7,700
	Hot	14	100	98,200	27,985	2,000	18	18	36,000
	Refrigerated	1	100	3,100	885	885	1	1	900
TOTALS		109	88				1,185	934	181,900
Petroleum Solvent									
Small	Transfer	5	50	2,900	870	175	105	53	9,300
Medium	Transfer	2	25	400	120	60	22	6	400
Large	Transfer	2	67	66,300	19,890	9,945	4	3	29,800
TOTALS							131	62	39,500

* Based on Table 4.6 and Table 4.10.

** Number of Plants Using Stills = (Total No. of Plants) x % (from Survey Results).

*** Average solvent content in sludges: perchloroethylene = 28.5%; petroleum solvent = 30%

TABLE 6.3

ESTIMATED WASTE SOLVENT RESIDUES IN FILTER MUCK FOR THE TOTAL ONTARIO DRY CLEANING INDUSTRY

SIZE	PROCESS	SURVEY RESULTS*					PROVINCE-WIDE		
		No. of Plants	%	Quantity of Filter Muck (kg/yr)	Quantity of Solvent in Muck (kg/yr)†	Quantity of Solvent in Muck (kg/plant·yr)	Totals of Plants	No. of Plants Using D.E. Filters**	Solvent Losses in Filter Muck (kg/yr)
Perchloroethylene									
Small	Transfer	3	9	700	170	55	570	51	2,800
	Hot	1	5	200	50	50	352	18	900
	Refrigerated	-	-	-	-	-	28	-	-
Medium	Transfer	1	3	100	25	25	110	3	100
	Hot	2	11	5,000	1,220	610	56	6	3,700
	Refrigerated	2	18	1,000	245	120	33	6	700
Large	Transfer	5	33	11,800	2,880	575	17	6	3,500
	Hot	2	13	5,300	1,295	650	18	2	1,300
	Refrigerated	-	-	-	-	-	1	-	-
TOTALS							1,185	92	13,000
Petroleum Solvent									
Small	Transfer	3	30	900	145	50	105	32	1,600
Medium	Transfer	1	25	100	15	15	22	6	100
Large	Transfer	1	33	90,700	14,700	14,700	4	1	14,700
TOTALS							131	39	16,400

* Based on Table 4.6 and Table 4.10.

** Number of Plants Using D.E. = Total No. of Plants x % (from Survey Results).

† Average solvent content: perchloroethylene = 24.4%; petroleum solvent - 16.2%

TABLE 6.4

ESTIMATED WASTE SOLVENT RESIDUES IN FILTER CARTRIDGES FOR THE TOTAL ONTARIO DRY CLEANING INDUSTRY

Size	Process	SURVEY RESULTS: # of Plants Surveyed	%	Solvent Content in Cartridges (kg./plant-yr)*: SCC	SAC	SPP	JCC	JAC	JPP	JAd	Total	PROVINCE WIDE: Total # of Plants	# of Plants Using Cart.	Quantity of Solvent in Cart. (kg/yr)**
Perchloroethylene														
Small	Transfer	28	91	14	3	0.1	9	11	-	22	59.1	570	519	30,600
	Hot	17	86	14	8	0.2	4	3	0.2	12	41.4	352	303	12,400
	Refrigerated	2	100	41	16	-	84	-	-	-	141	28	28	3,900
Medium	Transfer	32	97	6	44	0.2	316	25	0.2	-	391.4	110	107	41,800
	Hot	15	83	19	4	-	5	4	-	26	58	56	47	2,700
	Refrigerated	8	73	20	9	0.3	-	-	-	29	58.3	33	24	1,400
Large	Transfer	10	67	91	12	-	31	43	-	146	323	17	11	3,600
	Hot	16	84	49	20	-	145	-	-	-	214	18	16	3,400
	Refrigerated	1	100	-	52	-	157	-	-	-	209	1	1	200
													100,000	
Petroleum Solvent														
Small	Transfer	8	80	26	7	-	2	15	-	41	91	105	84	7,600
Medium	Transfer	4	100	37	11	-	125	-	-	185	358	22	22	7,900
Large	Transfer	3	100	-	700	300	393	50	189	42	1674	4	4	6,700
													22,200	

* Solvent content = solvent content/cartridge type (Table 5.6) x no. of cartridges disposed of per year (Table 5.7) divided by no of plants (Table 5.7).
** Overall Solvent Losses = total sovlent content per plant x no. of plants using cartridges

SCC = Standard Carbon Core
SAC = Standard All-Carbon
SPP = Standard Plain Paper

JCC = Jumbo Carbon Core
JAC = Jumbo All-Carbon
JPP = Jumbo Plain Paper
JAd = Jumbo Adsorptive

Petroleum solvent plants generated 39,500 kg of solvent losses in their waste sludges, which is substantially less than the quantity generated by perchloroethylene plants. This is due not only to the fact that a smaller number of plants use this particular solvent, but also because a smaller percentage of petroleum-solvent plants use distillation units. The largest volume of waste solvent losses was produced by the large petroleum-solvent plants, which disposed of 75% of the total.

Solvent losses through the disposal of cooked filter muck from diatomaceous earth filtration are given in Table 6.3. In this case, losses are greater from the petroleum solvent plants than from plants using perchloroethylene: 16,400 kg of petroleum solvent losses versus 13,000 kg of perchloroethylene losses. Diatomaceous earth filtration is generally practiced in older establishments, while cartridge filters are used in newer plants. As many of the petroleum solvent plants are older than their counterpart perchloroethylene plants, they would use diatomaceous earth filtration. This may partially explain the difference in solvent quantities generated. Also, as mentioned in an earlier section, the total for wastes from petroleum solvent plants includes one very large plant which processes much more dry cleaning than the other large plants, leading to larger waste quantitites. This one large petroluem solvent plant generated 14,700 kg of solvent/yr in their filter muck, while the most produced from large perchloroethylene plants was 650 kg of solvent per plant per year.

Table 6.4 presents the waste solvent residues found in filter cartridges for the total Ontario dry cleaning industry. Expected solvent losses is broken down into quantities by cartridge type.

The quantity of solvent losses via cartridges in plants using perchloroethylene is less than the quantity found in sludges, but more than 7 times the losses through cooked filter muck. This unregulated portion of solvent disposal thus represents a relatively substantial amount of perchloroethylene losses.

The largest portion of the 100,000 kg of perchloroethylene solvent disposed of yearly in cartridges comes from small and medium sized transfer facilities. The larger establishments contribute only about 7% of the total losses. As well, the majority of the solvent is disposed of with jumbo carbon-core type cartridges.

Petroleum solvent plants produce 22,200 kg of solvent in spent filter cartridges, which is less than quantities found in still bottom sludges but more than quantities found in cooked filter muck. The distribution of losses by size of plants is fairly equally distributed, with slightly more associated with medium-size dry cleaners. Losses of petroleum solvent occur mainly with jumbo adsorptive type cartridges.

Table 6.5 summarizes the estimated solvent losses per plant by processing technology and size as determined in Tables 6.2, 6.3 and 6.4. Table 6.6 presents a summary of the estimated total waste solvent residues province-wide for each type of waste generated. The total amount of perchloroethylene losses via waste disposal totals 294,900 kg/year, while 78,100 kg is disposed of yearly from plants using petroleum solvent.

6.3 Quantities by Geographic Region

The distribution of waste generation as developed in Section 6.2. can be further subdivided into volumes by MOE Region.

The first step to accomplish this task is to determine the distribution of dry cleaning plants by size for each geographic region. This is shown in Table 6.7. From the total number of plants by region (Table 4.1), 90% are assumed to use perchloroethylene, with the remaining 10% petroleum solvent plants. The size distribution was then established as per Table 6.1.

From this size distribution, the number of plants in each region using a particular type of processing technology can be estimated using the methodology outlined earlier in Section 6.1. The results by each region are given in Appendix 4, and are summarized in Tables 6.8 and 6.9 for perchloroethylene plants and petroleum solvent plants, respectively.

As expected, the majority of losses occur in Region 3, due to the large number of dry cleaning establishments in this area. Region 3 accounts for 62.4% of the perchloroethylene losses, and 58.5% of the petroleum solvent losses. Regions 4, 5 and 6 combined only contribute 13.0% and 5.1% of the total solvent losses of perchloroethylene and petroleum solvent, respectively.

TABLE 6.5 SUMMARY OF ESTIMATED SOLVENT LOSSES PER PLANT BY PROCESSING TECHNOLOGY AND SIZE

SIZE	PROCESS	SOLVENT LOSSES		
		Still Bottom Sludges (kg/plant/yr)	Filter Muck (kg/plant/yr)	Cartridges (kg/plant/yr)
Perchloroethylene				
Small	Transfer	60	55	59
	Hot	100	50	41
	Refrigerated	95	-	141
Medium	Transfer	540	25	390
	Hot	365	610	58
	Refrigerated	150	120	58
Large	Transfer	480	575	323
	Hot	2,000	650	214
	Refrigerated	885	-	209
Petroleum Solvent				
Small	Transfer	175	50	91
Medium	Transfer	60	15	358
Large	Transfer	9,945	14,700	1,674

TABLE 6.6 SUMMARY OF ESTIMATED TOTAL WASTE SOLVENT RESIDUES PROVINCE-WIDE BY PROCESSING TECHNOLOGY AND SIZE

SIZE	PROCESS	SOLVENT LOSSES IN WASTES (kg/yr)			
		Sludge	Filter Muck	Cartridges	Total
Perchloroethylene					
Small	Transfer	23,900	2,800	30,600	57,300
	Hot	28,900	900	12,400	42,200
	Refrigerated	2,000	-	3,900	5,900
Medium	Transfer	58,000	100	41,800	99,900
	Hot	20,500	3,700	2,700	26,900
	Refrigerated	4,000	700	1,400	6,100
Large	Transfer	7,700	3,500	3,600	14,800
	Hot	36,000	1,300	3,400	40,700
	Refrigerated	900	-	200	1,000
TOTALS		181,900	13,000	100,000	294,900
Petroleum Solvent					
Small	Transfer	9,300	1,600	7,600	18,500
Medium	Transfer	400	100	7,900	8,400
Large	Transfer	29,800	14,700	6,700	51,200
TOTALS		39,500	16,400	22,200	78,100

TABLE 6.7

DISTRIBUTION OF DRY CLEANING PLANTS BY MOE REGION
FOR THE TOTAL PROVINCE

MOE Region	Total No. of Plants	PERCHLOROETHYLENE PLANTS				PETROLEUM SOLVENT PLANTS			
		Total No. of Plants	No. of Small	No. of Medium	No. of Large	Total No. of Plants	No. of Small	No. of Medium	No. of Large
1	156	141	113	24	4	15	12	2	1
2	156	141	113	20	8	15	12	2	1
3	845	760	608	135	17	85	68	15	2
4	102	92	74	11	7	10	8	2	0
5	39	35	29	6	0	4	3	1	0
6	18	16	13	3	0	2	2	0	0
TOTALS	1,316	1,185	950	199	36	131	105	22	4

TABLE 6.8 SUMMARY OF ESTIMATED WASTE GENERATION BY MOE REGION - PERCHLOROETHYLENE PLANTS

MOE Region	No. of Plants	SOLVENT LOSSES IN WASTES			TOTAL	
		Sludge (kg/yr)	Filter Muck (kg/yr)	Cartridges (kg/yr)	(kg/yr)	(%)
1	141	20,900	1,700	11,500	34,100	11.6
2	141	24,800	1,600	11,900	38,300	13.0
3	760	111,500	8,000	64,700	184,200	62.4
4	92	18,500	1,500	7,800	27,800	9.4
5	35	4,200	100	2,700	7,000	2.4
6	16	2,000	100	1,400	3,500	1.2
TOTAL	1,185	181,900	13,000	100,000	294,900	100

TABLE 6.9 SUMMARY OF ESTIMATED WASTE GENERATION BY MOE REGION - PETROLEUM SOLVENT PLANTS

MOE Region	No. of Plants	SOLVENT LOSSES IN WASTES			TOTAL	
		Sludge (kg/yr)	Filter Muck (kg/yr)	Cartridges (kg/yr)	(kg/yr)	(%)
1	15	10,600	200	3,300	14,100	18.2
2	15	10,600	200	3,300	14,100	18.2
3	85	16,700	15,700	13,600	45,700	58.5
4	10	1,000	100	1,300	2,400	3.1
5	4	400	100	500	1,000	1.3
6	2	200	100	200	500	0.7
TOTAL	131	39,500	16,400	22,200	78,100	100

6.4 Mass Balance Over Province

6.4.1 Disposal Method

There are basically only 3 methods dry cleaners use to dispose of their wastes which contain solvent. These include submitting the wastes for recyling, unlicensed disposal (i.e., into municipal refuse) licensed disposal into a secure industrial landfill site. Some dry cleaners are stockpiling their wastes until a suitable disposal practice is decided upon.

Table 6.10 and 6.11 examine the distribution of waste residues by disposal practice for plants using perchloroethylene and petroleum solvent, respectively. Appendix 5 gives a more detailed breakdown of disposal practices used for each waste type versus size and processing technology.

As seen in Table 6.10, almost 59% of all perchloroethylene disposed of in waste residues is recycled. Still bottom sludges are the only waste type disposed of in this manner. No petroleum solvent wastes are recycled.

The licensed disposal of wastes containing perchloroethylene into secure landfill sites accounts for only 2.4% of the total waste quantity. Less than 1% of this total is accounted for by filter cartridges. Petroleum solvent plants, on the other hand, dispose of about 68% of their wastes by licensed disposal, with the majority of this total consisting of still bottom sludges.

Almost 40% of perchloroethylene wastes are dumped into municipal garbage, with cartridge filters accounting for 86% of this total. Most spent cartridge filters are disposed on in this way, as is the case with cooked filter muck. Only a small portion of still bottom sludges are disposed of into municipal refuse.

Most cartridges from petroleum solvent plants are also disposed of into municipal refuse, accounting for 78% of the total 30% of petroleum solvent wastes disposed of in this manner. Only a small quantity of petroleum solvent sludges and filter muck are disposed of by unlicensed disposal.

TABLE 6.10 ESTIMATED DISTRIBUTION OF WASTE RESIDUES BY DISPOSAL PRACTICE - PERCHLOROETHYLENE (KG OF SOLVENT LOSSES/YEAR)

Disposal Practice	Waste Residue	PLANT SIZE				
		Small (kg/yr)	Medium (kg/yr)	Large (kg/yr)	Total (kg/yr)	%
Recycled	Still Bottom Sludges	48,100	81,000	44,600	173,700	58.9
Licensed Disposal	Filter Muck	-	-	4,800	4,800	1.6
	Cartridges	1,400	100	700	2,200	0.8
Sub Total		1,400	100	5,500	7,000	2.4
Unlicensed Disposal	Still Bottom Sludges	6,700	1,000	-	7,700	2.6
	Filter Muck	3,700	4,400	-	8,100	2.8
	Cartridges	45,500	45,800	6,500	97,800	33.1
Sub Total		55,900	51,200	6,500	113,600	38.5
Stockpiling	Still Bottom Sludges	-	500	-	500	0.2
TOTALS		105,400	132,800	56,600	294,900	100

TABLE 6.11 ESTIMATED DISTRIBUTION OF WASTE RESIDUES BY DISPOSAL PRACTICE - PETROLEUM SOLVENT (KG OF SOLVENT LOSSES/YEAR)

Disposal Practice	Waste Residue	PLANT SIZE Small (kg/yr)	Medium (kg/yr)	Large (kg/yr)	Total (kg/yr)	%
Recycled		-	-	-	-	-
Licensed Disposal	Still Bottom Sludges	4,300	-	29,800	34,100	43.7
	Filter Muck	-	-	14,700	14,700	18.8
	Cartridges	-	1,600	3,000	4,600	5.9
Sub Total		4,300	1,600	47,500	53,400	68.4
Unlicensed Disposal	Still Bottom Sludges	3,100	400	-	3,500	4.5
	Filter Muck	1,600	100	-	1,700	2.2
	Cartridges	7,600	6,300	3,700	17,600	22.5
Sub Total		12,300	6,800	3,700	22,800	29.2
Stockpiling	Still Bottom Sludges	1,900	-	-	1,900	2.4
TOTALS		18,500	8,400	51,200	78,100	100

6.4.2 Solvent Losses

Solvent losses from dry cleaning establishments include losses from the waste disposal of still bottom sludges, filter muck and spent cartridge filters; air emissions; contaminated water disposed to sewers; and minor losses as may occur through solvent remaining on dry cleaned fabric.

Quantities of solvent disposed of in waste residues were determined earlier in this section. Contaminated water from water separators on solvent reclaim equipment has been found to contain from 1 to 43 ppm of perchloroethylene (private correspondence with New Brunswick MOE). Although the total quantity of losses from waters to sewers was not quantified, overall losses would be minor. Air losses would be major due to the volatile nature of the solvent.

Quantities of perchloroethylene lost via air emissions were estimated using values obtained from a study conducted on dry cleaners in British Columbia (Environment Canada, 1983). This study determined that evaporation during processing accounted for as much as 90% of the total solvent losses. Total emissions of perchloroethylene ranged from as high as 150 kg of solvent per 1000 kg of clothing processed for poorly operated transfer facilities, down to as low as 18 kg/1000 kg for carefully controlled operations using refrigeration units. No similar data were available for petroleum solvent plants.

The estimated total solvent used by the dry cleaning industry by plant size and processing technology is given in Table 6.12 as 2,455,300 litres/year of perchloroethylene (4,026,700 kg/yr) and 1,654,400 litres/yr (1,240,800 kg/yr) of petroleum solvent. The values for perchloroethylene usage are within 10% of the total volume given by perchloroethylene manufacturers for solvent purchases in 1986 (Section 4.5). No actual values were obtainable for petroleum solvent purchases from solvent manufacturers.

Table 6.13 shows the expected quantities of solvent that would be lost via air emissions from each type of processing technology in perchloroethylene plants. Emissions of solvent from transfer units ranges from 100 to 150 kg/1000 kg of processing, while emissions from hot units can range from 49 to 75 kg/1000 kg. An average value of each range was used to calculate expected solvent emissions from each processing category. Air losses from refrigerated units was assumed to be 18 kg/1000 kg processing.

TABLE 6.12 ESTIMATED SOLVENT USE BY DRY CLEANERS PROVINCE-WIDE

SIZE	PROCESS	SURVEY RESULTS			PROVINCE-WIDE	
		No. of Plants	Solvent (L/yr)	Usage (L/plant.yr)	No. of Plants	Solvent Usage (L/yr)
Perchloroethylene						
Small	Transfer	33	67,000	2,030	570	1,157,100
	Hot	22	29,000	1,320	352	464,600
	Refrigerated	4	2,000	500	28	14,000
Medium	Transfer	19	78,000	4,100	110	451,000
	Hot	18	49,000	2,720	56	152,300
	Refrigerated	11	14,000	1,275	33	42,100
Large	Transfer	15	85,000	5,670	17	96,400
	Hot	11	42,000	3,820	18	68,800
	Refrigerated	1	9,000	9,000	1	9,000
TOTAL						2,455,300 L/yr 4,026,700 kg/yr*
Petroleum Solvent						
Small	Transfer	10	42,000	4,200	105	441,000
Medium	Transfer	4	75,000	18,700	22	411,400
Large	Transfer	2	100,250	200,500	4	802,000
TOTAL						1,654,400 L/yr 1,240,800 kg/yr**

* Perchloroethylene = 1.64 kg/L
** Petroleum Solvent = 0.75 kg/L

TABLE 6.13 ESTIMATED AIR LOSSES OF PERCHLOROETHYLENE FROM DRY CLEANING PLANTS IN ONTARIO

PROCESS	SIZE	Solvent Usage (L/1,000 kg)	Solvent Purchases (L/yr)	Annual Dry Cleaning Processed (1,000's kg/yr)	SOLVENT EMISSIONS* (kg of perc/ 1,000 kg processing)	SOLVENT EMISSIONS* (kg/yr)
Transfer	Small	100	1,157,100	11,570		
	Medium	87	451,000	5,180		
	Large	38	96,400	2,540		
				19,290	115	2,218,350
Hot	Small	39	464,600	11,915		
	Medium	49	152,300	3,110		
	Large	42	68,800	1,640		
				16,665	62	1,033,230
Refrigerated	Small	29	14,000	485		
	Medium	23	42,100	1,830		
	Large	67	9,000	135		
				2,450	18	44,100
TOTALS						3,295,680 kg/yr

* Based on data from Environment Canada (1983)

The amount of processing done by each plant category was calculated by taking the average solvent "mileage" of each plant category, (Table 4.7, in terms of litres of solvent/1000 kg processing), and dividing this number into the annual solvent purchases from Table 6.12. This number was then multiplied by the solvent emission per 1000 kg of processing to give the overall air emissions per each category.

The most substantial amount of air solvent losses occured in transfer establishments. The major cause of this is age of equipment, poor maintenance and operator carelessness. According to DCLI, the major source of solvent loss would be the tumbler itself, and not the transfer of clothing from the washer-extractor to the tumbler-dryer. In the tumbler, the major problems contributing to solvent losses would be back pressure from the coils, worn or damaged seals, and plugged lint filters.

6.4.3 Overall Mass Balance

The overall mass balances of solvent losses in dry cleaning establishments are presented in Table 6.14. Using the estimates developed in this report for waste disposal, and estimates for airborne losses from other sources, the overall mass balance for perchloroethylene closed within 11%. This is excellent accountability given the disparate sources of data and the extrapolations necessary to estimate losses.

In perchloroethylene plants, almost 82% of solvent purchases are lost via air emissions. This is within the same range as determined in the Environment Canada study in British Columbia. Waste residues account for a total 7.3%, with still bottom sludges containing 4.5%, filter muck 0.3% and cartridges 2.4%. Unaccounted solvent losses were totalled to be 11.0%, including losses to the sewer of contaminated water.

A satisfactory mass balance was not obtained for petroleum solvent plants, as values for air emission losses were unavailable. It is expected, however, that evaporative solvent losses would be substantial, as was the case with plants using perchloroethylene.

It is evident from Table 6.14 that the major environmental loss pathway from the dry cleaning industry in Ontario is air emissions, accounting for about 10 times the quantity of solvent lost through solid or liquid waste disposal.

TABLE 6.14 OVERALL SOLVENT MASS BALANCES

Route of Loss	Perchloroethylene		Petroleum Solvent	
	(kg/yr)	%	(kg/yr)	%
Still Bottom Sludges	181,900	4.5	39,500	3.2
Filter Muck	13,000	0.3	16,400	1.3
Filter Cartridges	100,000	2.5	22,200	1.8
Air Emissions*	3,295,680	81.7	Unknown	Unknown
TOTAL	3,590,580	89.0	-	-
Annual Solvent Purchase	4,026,700	100	1,240,800	100
Miscellaneous Losses	436,120	11.0	-	-

* Estimated value from Table 6.13

7.0 MANAGEMENT PRACTICES OF OTHER JURISDICTIONS

7.1 Regulations/Guidelines

United States

In the United States, the federal E.P.A. sets the standards on the regulation of wastes from the dry cleaning industry. Since September 22, 1986, all dry cleaners producing more than 100 kg of waste per month have been required to register an E.P.A. hazardous waste manifest. Prior to this time, the small quantities exemption level was 1000 kg/month. At the previous level, the majority of dry cleaners were exempt from using a hazardous waste manifest. With the 100 kg level, the majority of all dry cleaners are affected.

Cooked powder residues (from perchloroethylene plants only), still bottom sludges and spent cartridge filters with perchloroethylene or fluorocarbons are considered hazardous and are listed under the EPA hazardous waste number of F002. Still bottom residues containing petroleum solvent with a flash point less than 140°F are also considered hazardous under EPA hazardous waste number D001.

The EPA considers all cartridges from perchloroethylene plants hazardous, no matter what method of solvent recovery is used prior to disposal. Any exemption is opposed unless perchloroethylene levels are reduced to 0.02 ppm. To determine this exemption level, the EPA currently uses a "Vertical and Horizontal Spread" model, (VHS model), which will predict the concentration of an organic in a drinking well 500 feet from a landfill site, given the initial concentration of the organic as disposed of. This model is based on a leachate test which has been developed for 38 different organics.

Using the VHS model and a maximum acceptable level for perchloroethylene (in groundwater) of 0.07 ug/L, a cartridge disposed of in a landfill could not contain more than 0.02 ppm. As this value is physically unattainable with present technology, basically all cartridges are considered hazardous and unsuitable for landfill disposal.

The E.P.A. also implemented a ban on the landfill disposal of dry cleaning wastes as of November 8, 1986. The only options thus available to dry cleaners for disposal is

recycling and high-temperature incineration. This land-ban regulation exempts generators under 100 kg/ per month. If a dry cleaner is under 100 kg, wastes can be disposed of in landfills. However, this requires locating a landfill which would accept the waste, which is still classified as "hazardous".

EPA regulations may be superceded by state agencies. For example, some states may have zero exemptions while others have different forms to fill out for manifesting or obtaining ID numbers. Table 7.1 summarizes the different regulations and small quantities exemption in place in other jurisdictions in the United States and Canada.

Most other states which have final authoriztion to run their own hazardous waste programs follow the US E.P.A.'s lead in regulating dry cleaning wastes. Kansas and New York State differ slightly. In Kansas, if a cartridge is demonstrated to contain less than 2% perchloroethylene, disposal in a municipal landfill site is acceptable. This level is considered attainable by steam stripping. Over this level, cartridges are required to go to hazardous disposal sites. As well, the small quantity exemption in Kansas was reduced to 25 kg/month on July 1, 1986. New York state also has a 2% land-ban, where wastes with solvent content less than 2% can go to a hazardous waste landfill site. Above this level, wastes must either be recycled or incinerated.

At least 3 states, Minnesota, Tennessee and Nebraska are looking at enforcement exemptions which would allow for the disposal of cartridges into sanitary landfill sites. These states are trying to delist spent cartridges as a hazardous waste, and are specifically seeking a variance which excludes stripped cartridges with not more than 5 ppm perchloroethylene. They argue that another alternative to sending filters offsite or recycling is needed, since such facilities are not available in all states. Some states are also using the argument that stripped cartridges may actually serve as an environmental benefit, since the activated carbon in the cartridge would be almost completely free of perchloroethylene, and could theoretically absorb other toxics present in a landfill, such as household chemicals.

Canada

Under the Transportation of Dangerous Goods Act (TDGA) from Environment Canada, cartridges, still bottom sludges and filter muck with concentrations of perchloroethylene

TABLE 7.1 SUMMARY OF DRY CLEANING WASTE MANAGEMENT PRACTICES OF OTHER JURISDICTIONS

Jurisdiction	Regulation	Small Quantities Exemption	Waste Registration Procedure
UNITED STATES			
Federal EPA	**Perchloroethylene:** all cooked powder residue, still residues and spent cartridges considered hazardous	All combined waste streams under 100 kg/month are exempt	All dry cleaners must register with generator registration and obtain an EPA identification number
	Valclene: all still residues and spent cartridges considered hazardous		Perc and valclene wastes classified under EPA Hazardous Waste No. F002
	Petroleum Solvent: still residues with a flash point less than 140,F considered hazardous		Varsol classified under EPA Hazardous Waste No. D001
Kansas	**Perchloroethylene:** all cooked powder, sludges and spent cartridges with more than 2% perc by weight are considered hazardous. If 2% or less, may dispose of in sanitary landfill (2% land-ban)	All combined waste streams under 25 kg/month are exempt	Some registration procedure as with EPA, but different manifest forms
Ohio, Pennsylvania, Texas	as per EPA	as per EPA	as per EPA
New York	**Perchloroethylene:** all waste residues with more than 2% perc by weight are considered hazardous. If less than 2%, may dispose of in hazardous waste landfill	as per EPA	Same regulation procedure as with EPA, but different manifest forms
Michigan, Connecticut, California	as per EPA	No small quantities exemption	Same registration procedure as with EPA, but different manifest forms and identification numbers
Minnesota, Tennessee, Nebraska	Currently regulated as per EPA Trying to delist cartridges	No small quantities exemption	Same registration procedure as with EPA, but different manifest forms and identification numbers
CANADA			
British Columbia	Currently no regulations Under review	-	Waste transportation manifest with British Columbia identification number and a Transport of Dangerous Goods Act I.D. number if over 100 ppm. perchloroethylene. Must register with generator registration and obtain identification number
Alberta, Manitoba	Currently no regulations - will follow Ontario's lead	-	Waste transportation manifest with TDCA identification number
New Brunswick, P.E.I., Nova Scotia	As of 30 November 1986, no dry cleaning waste residue can be disposed of to a landfill site ("land-ban")	No small quantities exemption	Waste transportation manifest with TDGA identification number. Must register with generator registration and obtain identification number.

more than 100 ppm would be regulated. This entails the posting of appropriate placards on the transportation vehicle displaying the hazardous nature of the material being transported, as well as completion of waste transportation manifests.

Most provinces in Canada do not regulate wastes from the dry cleaning industry. The main exception is the Maritime provinces (excluding Newfoundland), which have placed a landfill ban on all dry cleaning wastes as of November 30, 1986. Dry cleaners must store their wastes and have them hauled out of the province. Initially, an upper limit of perchloroethylene in cartridges, below which disposal was acceptable, was considered. However, the idea was discarded since it was determined that it would be too difficult to enforce.

British Columbia currently has no regulations for dry cleaning wastes but is in the process of conducting a study to determine what, if any, regulations should be implemented. Alberta and Manitoba also have no regulations in place, and are waiting for Ontario's decision prior to making any changes.

7.2 Monitoring Procedure

United States

The requirements of the EPA for dry cleaners who generate more than 100 kg of hazardous waste in any calendar month become subject to the federal agency's small quantity generated requirements. These requirements include:

- having an EPA identification number for each plant location
- filling out multiple-copy manifests for each waste shipment
- shipping all wastes in approved containers using only licensed haulers who will take it to an approved hazardous waste facility
- each plant must designate an emergency contact person who will be available 24 hours a day by telephone to be notified in case of a spill or other emergency.

These rules apply to dry cleaners when their wastes exceed 100 kg/month.

Often, dry cleaners may find that in some months they exceed the 100 kg benchmark, while in others they are below this level. If the 100 kg limit is not reached in a calendar month, the cleaner is classed as a conditionally exempt small quantity generator. Conditionally exempt generators are required to identify all hazardous wastes they generate, send the waste to a hazardous waste facility or other facility approved by the state, and never accumulte more than 100 kg of waste on site.

Most other states follow EPA's waste registration procedure. Some may use different manifest forms or ID numbers, as indicated in Table 7.1.

Canada

The transport of perchloroethylene in concentrations greater than 100 ppm is regulated under the TDGA with the use of a waste transportation manifest and a TDGA identification number. British Columbia, as with Ontario, also register all wastes containing perchloroethylene. The Maritime provinces (excluding Newfoundland) also follow a waste registration procedure as in the United States, with proper identification numbers and multiple-copy manifests required.

8.0 CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusions

The following conclusions have been drawn from the information presented in this report.

- The total quantity of perchloroethylene disposed of in wastes from dry cleaning plants in Ontario totalled approximately 294,900 kg in 1986, or 7.3% of the total volume of solvent purchased annually. The majority of solvent losses (almost 82%) are via air emissions.

- Waste residues from petroleum solvent plants contained 78,100 kg of solvent, equalling 6.3% of the total solvent purchases in 1986 for the dry cleaning industry in Ontario. The majority of solvent losses are also likely to be through air emissions.

- Approximately 90% of all dry cleaning plants in Ontario use perchloroethylene as the cleaning solvent, with the balance using petroleum solvent (about 10%) or fluorocarbons (0.2%).

- Transfer is the most commonly used dry cleaning technology, with approximately 64% of the plants using this process.

- Distillation Units are used in approximately 88% of the perchloroethylene plants. Diatomaceous earth filtration is used, in only 11% of all dry cleaning plants in Ontario, while close to 90% use cartridge filters.

- Almost all (99%) still bottom sludges containing perchloroethylene are accumulated on-site, and then sent to recyclers for reclaim of the solvent; however, 13% of the small plants in Ontario do not follow this practice.

- Almost all (97%) still bottom sludges from petroleum solvent operations are hauled to industrial landfill sites, while 2% use municipal landfills by way of municipal refuse disposal bins.

- Cooked filter muck from perchloroethylene operations is disposed of to either municipal refuse (24% by weight) or to a secure landfill (71%). The majority of the filter muck going to the secure landfill site comes from a number of plants which operate under the same chain.

- Petroleum solvent cooked filter muck is almost entirely disposed of to industrial landfill (99%).

- About 90% of all cartridge filters from perchloroethylene cleaning are disposed of to municipal garbage; the majority (83%) of these cartridges come from medium and large-size plants.

- The most common method used to recover perchloroethylene from spent cartridges prior to disposal is the cabinet/sniffer arrangement. Forty-one percent of the dry cleaning establishments which use cartridges practice this form of recovery.

- Steam-stripping of cartridges to recover perchloroethylene is practiced in less than 20% of the dry cleaning plants in Ontario.

- It appears that about 1% perchloroethylene in spent filter cartridges is the lowest concentration achievable by any of the methods currently used to remove solvent from cartridges.

- Only 34% of the cartridges from petroleum solvent plants are disposed of with municipal refuse; the remainder are hauled to an industrial landfill.

- The concentration of perchloroethylene in still bottom sludges averaged 28.5%, with cooked filter muck averaging 24.4%. Reduced perchloroethylene content in sludges in the 10 to 15% range should be routinely achievable by the industry.

8.2 Recommendations

During the course of this study, it became apparent that there was no information source readily available from which dry cleaners obtain retail information on proper disposal methods and other areas of concern. Many dry cleaners were confused by conflicting answers given by suppliers of equipment, recyclers, and ministry officials. As well, it was found from the survey that a large percentage of the small plants, 13%, dispose of their perchloroethylene still bottom sludges to municipal refuse, likely due in part to ignorance as to proper disposal methods required by the Ministry of the Environment.

The DCLI will provide information to its members if requested, and will assist the Ministry to the extent of its ability on the development of an approach to manage dry cleaning wastes. Non-DCLI members, which represent approximately half of the dry cleaning industry, would not be as well-informed. It is thus recommended that the Ministry of the Environment take steps to advise all dry cleaners in Ontario on the regulations and options available to them for waste disposal practices. The DCLI could work with the MOE to inform DCLI members of any policies enacted by the MOE. Non-members would need to be informed via direct contact by the MOE with individual cleaners.

Although it was not in the original terms of reference, it appears that there is potential for significant reductions in airborne emissions of solvent. This could be achieved by enforcing higher solvent mileage, possibly through a reporting requirement. The disparity between values for small, medium and large plants noted in Table 4.7 seems to indicate that transfer, and to some degree, hot units are not achieving peak efficiency. The DCLI has suggested that solvent mileage in the range of 40 to 50 L/1000 kg (200 to 250 lbs/gallon) is consistently achievable even with transfer equipment, through the application of minor changes in operating and maintenance procedures (e.g., gasket replacement) particularly for reclaimer and adsorber operation. It has been suggested that these changes could increase profitably through reduced solvent purchases, and decrease the losses of solvent to the environment.

Upon return of the questionnaire, each was reviewed thoroughly to ensure complete and reasonable responses. In some cases, the answers did not seem logical, so a telephone follow-up to these plants was made to confirm and/or correct the questionable answers.

2.3.3 Site Visits and Sampling

Sampling of wastes from dry cleaning plants was conducted to obtain information on solvent content in still bottom sludges, filter muck and spent filter cartridges. Plants were chosen to represent all possible combinations of plant size, solvent type and processing technology, as discussed further in Section 5.1 and Section 5.2. Resampling was done at one selected plant to allow for an estimation of in-plant variability. Thus both plant-to-plant variations and in-plant variations were obtained.

Plant selection was also based on convenience of plant location to the BEAK office, with site visits only in the central and west-central regions. A total of 16 plants were sampled with the focus primarily on hot and transfer technology using perchloroethylene, as these represent up to 90% of the industry in Ontario.

2.3.4 Data Evaluation

Data evaluation was performed in two stages. The initial step involved the evaluation of the questionnaires. This data was processed to obtain the distribution of dry cleaning establishments by size (in terms of quantity of clothing processed per month), processing technology, solvent use and quantities and types of wastes generated.

The second stage in the data evaluation involved the extrapolation of results obtained from the questionnaire to province-wide estimates. This information also helped to provide a profile on the dry cleaning industry in Ontario.

The results determined from the sampling of wastes from individual dry cleaners were used in conjunction with the questionnaire results to provide an estimate of solvent losses to the environment via wastes generated. A mass balance was then made to quantify solvent losses to determine the overall fate of solvents used in the dry cleaning industry.

9.0 REFERENCES

Environment Canada (1983), "Investigation into losses to the environment during processing or usage of selected hydrocarbon solvents", Environmental Protection Services, British Columbia.

International Fabricare Institute (1986), "Reduction of solvent content in Cartridges", IFI Technical Bulletin T-568.

International Fabricare Institute (May 1984), "Still residue and cooker muck update", IFI Fabricare News, Research Briefs.

International Fabricare Institute (1983), "Reducing perc content in residues", IFI Technical Bulletin, T-560.

Ontario Ministry of Labour (1982), "Occupational exposure to certain chlorinated hydrocarbons", prepared by Concord Scientific Corporation and M.M. Dillon Ltd.

10.0 ACKNOWLEDGEMENTS

BEAK Consultants Limited wish to acknowledge the efforts and co-operation of all those who participated in this project. In particular, thanks go to Mr. Ken Adamson and Ms. Nancy Derrer of the Dry Cleaners and Launderers Institute (DCLI) for their co-operation and support for the project in providing information and reviewing our work. Thanks go to all the representatives of individual dry cleaning companies who took the time to complete questionnaires, respond to our telephone calls, and give permission to conduct sampling and process review visits. Thanks also go to Mr. Bob Breeze and Mr. George Rocoski of MOE for their assistance throughout the project and review of the report.

APPENDIX 1

ESTABLISHMENT LISTING

Dry Cleaners

BUSINESS NAME		ADDRESS	COMMUNITY	PRO	PAC	TELEPHONE	REGION
** IA							
ADAM S DRY CLEANERS		751 HAMILTON RD	LONDON	ON	N5Z1I8	5194538410	IA
AGO INDUSTRIES		10 411 INDUSTRIAL	LONDON	ON	N5Y4J9	5194523780	IA
ALADDIN DRY CLEANING SERVICE		1127 RICHMOND	LONDON	ON	N6A3P6	5194391771	IA
ALLEN'S DRY CLEANERS		18 INKERMAN	ST THOMAS	ON	N5P3E8	5196311370	IA
ARGO CLEANERS		1001 HOWARD	WINDSOR O	ON	N9A1S6	5192563094	IA
ARROW LAUNDRY & DRY CLEANERS		400 ST CLAIR	CHATHAM	ON	N7L3K2	5193521700	IA
AYLMER CLEANERS LTD		43 TALBOT W	AYLMER	ON	N5H1J6	5197733921	IA
BARGE'S CLEANERS		149 CHRISTINA	SARNIA	ON	N7T2M7	5193375462	IA
BEACON CLEANERS		1640 LONDON	SARNIA	ON	N7T7H2	5195426351	IA
BETTY BRITE DRY CLEANERS		WHEELS PLAZA	CHATHAM	ON	N7M3H3	5193513881	IA
BLONDIE CLEANERS LTD		909 RIVERSIDE DR E	WINDSOR	ON	N9A2T5	5192544364	IA
BLUEWATER CLEANERS		38 WEST	GODERICH	ON	N7A2K3	5195246231	IA
BONDY'S CLEANERS		122 RICHMOND	CHATHAM	ON	N7M1N9	5193524284	IA
BOUCHARD CLEANERS		21 MAITLAND TERR	STRATHROY	ON	N7G1L2	51924513R2	IA
BRIDGE VIEW CLEANERS		2101 TECUMSEH W	WINDSOR O	ON	N9B1V9	5192549246	IA
BURDOCK'S FABRIC CARE		WESTOWN PLAZA	LONDON	ON	N6H1S6	5194346445	IA
BURDOCK'S FABRIC CARE		ARGYLE MALL	LONDON	ON	N5V1P7	5194558240	IA
BURDOCK'S FABRIC CARE		WESTMOUNT MALL	LONDON	ON	N6K1M6	5194716760	IA
BURTOL CLEANERS		673 ONTARIO	STRATFORD	ON	N5A3J6	5192712820	IA
CARSON CLEANERS		640 13 AV	HANOVER	ON	N4N2X1	5193642380	IA
CARTER CLEANERS		60 KENT	WOODSTOCK	ON	N4S6Y7	5195399771	IA
CATHCART CLEANERS		635 CATHCART	SARNIA	ON	N7V2N1	5193321515	IA
CITY WIDE CLEANERS		213 DUNDAS	WOODSTOCK	ON	N4S1A8	5195391208	IA
CLEAN MACHINE THE		1299 OXFORD	LONDON	ON	N5Y4W4	5194519404	IA
CLICK & CLEAN SHOPS		2529 JEFFERSON	WINDSOR O	ON	N8T2W5	5199451135	IA
COLONIAL CLEANERS		7805 WYANDOTTE E	WINDSOR O	ON	N8S1S8	5199487331	IA
COMMUNITY CLEANERS &	LAUNDERERS	145 QUEEN	CHATHAM	ON	N7M2G7	5193527400	IA
CUSTOM CLEANERS		771 SOUTHDALE RD E	LONDON	ON	N6E2C8	5196861122	IA
CUSTOM CLEANERS AMHERSTBURG	LIMITED	131 GORE	AMHERSTBURG	ON	N9V1K8	5197362145	IA
DAISY FRESH DRY CLEANERS		5 HURON	WOODSTOCK	ON	N4S6Y9	5195396767	IA
DAY CLEANERS		235 NELSON	WALLACEBURG	ON	N8A4G5	5196272279	IA
DIONE ENTERPRISES		904 TECUMSEH E	WINDSOR O	ON	N8X2S6	5192521710	IA
DOUGLAS CLEANERS		1095 2 AV E	OWEN SOUND	ON	N4K2H8	5193763317	IA
DUTCH GIRL CLEANERS		5440 WYANDOTTE E	WINDSOR O	ON	N8S1L8	5199453566	IA
ELLA'S TAWCO DRY CLEANERS		940 MURPHY	SARNIA	ON	N7S5C5	5195428388	IA
ESSEX DRY CLEANERS		19 CENTRE	ESSEX	ON	N8M1N8	5197768591	IA
FAIRMONT CLEANERS		972 HAMILTON RD	LONDON	ON	N5W1V6	5194521707	IA
FAMOUS CLEANERS		816 HANNA E	WINDSOR	ON	N8X2N8	5192549777	IA
FLETCHER'S CLEANERS		245 ERIE S	LEAMINGTON	ON	N8H3C3	5193264558	IA
FOREST GLADE DRY CLEANERS		3101 FOREST GLADE DR	TECUMSEH	ON	N8R1W6	5197355772	IA
FORSYTH FABRIC CARE CENTRES		337 DUNDAS	LONDON	ON	N6B1V5	5194326549	IA
GODERICH FRENCH DRY CLEANERS		35 WEST	GODERICH	ON	N7A2K5	5195246452	IA
HANOVER DRY CLEANERS		207 10 ST	HANOVER	ON	N4N1N8	5193641890	IA
HAPPY DRY CLEANERS		332 WELLINGTON RD	LONDON	ON	N6C4P6	5194320612	IA
HAWKE'S CLEANERS & PRESSERS		824 3 AV E	OWEN SOUND	ON	N4K2K5	5193767520	IA
HIGHLANDER LAUNDRY AND CENTRE LTD	DRYCLEANING	371 ST CLAIR	CHATHAM	ON	N7L3K5	5193545432	IA
HILDA'S ALTERATIONS &	DRYCLEANING	5031 WYANDOTTE E	WINDSOR O	ON	N8S1M7	5199481771	IA
I X L CLEANERS LTD		1409 TECUMSEH E	WINDSOR O	ON	N8W1C2	5192563426	IA
IMAGE CLEANERS		76 FRONT E	STRATHROY	ON	N7G1X4	5192454991	IA
IMPERIAL CLEANERS SARNIA LTD		174 MITTON N	SARNIA	ON	N7T6H2	5193442495	IA
INGERSOLL DRY CLEANERS		83 THAMES S	INGERSOLL	ON	N5C2T2	5194851920	IA
IRENE'S DRY CLEANING SERVICE		4 QUEEN	ST THOMAS	ON	N5R3H8	5196330536	IA
IZZY'S LEISURE LAUNDERETTE & CLEANING SERVICE	QUALITY DRY	1101 JALNA BL	LONDON	ON	N6E3H3	5196811532	IA

Dry Cleaners

BUSINESS NAME	ADDRESS	COMMUNITY	PRO	PAC	TELEPHONE	REGION
JARMAIN CLEANERS & LAUNDERERS	30 CHARTERHOUSE CR	LONDON	ON	N5W5V5	5194533140	1A
JOY CLEANERS & DRAPERY SERVICE	1501 TECUMSEH W	WINDSOR O	ON	N9B1T9	5192548471	1A
K M CLEANERS	285 INDIAN S	SARNIA	ON	N7T3W6	5193379511	1A
KEEP-U-NEET CLEANERS LTD	182 HUNTINGDON	STRATFORD O	ON	N5A6P5	5192714516	1A
KENNEDY'S CLEANERS	37 TALBOT E	LEAMINGTON	ON	N8H1L1	5193263645	1A
LA MODERNA DRY CLEANING	100 KING W	CHATHAM	ON	N7M6A9	5193510610	1A
LABA CLEANERS	56 ERIE S	LEAMINGTON	ON	N8H3A9	5193262826	1A
LABA CLEANERS	12 TALBOT N	ESSEX	ON	N8M1A4	5197765521	1A
LISTOWEL DRY CLEANERS	135 WELLINGTON S	LISTOWEL	ON	N4W2H7	5192913831	1A
LOCKWOOD PARK DRY CLEANERS	699 WILKINS	LONDON	ON	N6C5G8	5196856090	1A
MAPLE CITY LAUNDRY & DRY CLEANERS LTD	310 PARK AVW	CHATHAM	ON	N7M1W8	5193542840	1A
MARIA'S CLEANERS CENTRE	3905 SEMINOLE	WINDSOR O	ON	N8Y1Z1	5199484100	1A
MASTER CLEANERS	1081 OTTAWA	WINDSOR	ON	N8X2E3	5192582100	1A
MASTER CLEANERS & SHIRT LAUNDERERS	592 QUEEN	CHATHAM	ON	N7M2J8	5193543514	1A
MCNAMARA'S SPEEDY SERVICE CLEANERS	381 TALBOT	LONDON	ON	N6P2R7	5194397981	1A
MCNAMARA'S SWAN CLEANERS	1026 OXFORD E	LONDON	ON	N5Y3K9	5194550820	1A
MERCURY CLEANERS & TAILORS	768 HAMILTON RD	LONDON	ON	N5Z1T9	5194554640	1A
METRO DRY CLEANERS	441 PELISSIER	WINDSOR O	ON	N9A4L2	5192561058	1A
MODERN CLEANERS	801 LOUIS	WINDSOR O	ON	N9A1X4	5192535274	1A
MURPHY ROAD DRY CLEANERS	1226 MURPHY	SARNIA	ON	N7S2Y6	5195423117	1A
ONE HOUR MARTINIZING	NORTH MAPLE MALL	CHATHAM	ON	N7M5J7	5193549768	1A
ONE HOUR MARTINIZING	DEVONSHIRE MALL	WINDSOR	ON	N8X3Y8	5199695624	1A
ONE HOUR MARTINIZING OF SARNIA	443 EXMOUTH	SARNIA	ON	N7T5P2	5193377523	1A
ONE HOUR VANITY FAIR	609 DUNDAS	WOODSTOCK	ON	N4S1C8	5195375431	1A
ORR DRY CLEANERS	1240 COMMISSIONERS W	LONDON	ON	N6K1C7	5194715050	1A
OXFORD DRY CLEANING	197 CENTRAL	LONDON	ON	N6A1M3	5194349755	1A
P M L TAILOR & CLEANER	26 UNIVERSITY E	WINDSOR O	ON	N9A2Y4	5192528989	1A
PAL CLEANERS	579 JAMES	DELHI	ON	N4B2C5	5195820200	1A
PAUL'S CLEANERS	3 SIMCOE	TILLSONBURG	ON	N4G2H4	5198424226	1A
PERRY'S CLEAN-UP SERVICE	208 ELM	AYLMER	ON	N5H1P5	5197733344	1A
PERSONAL DRY CLEANERS & TAILORS	176 HORTON	LONDON	ON	N6B1K8	5194321404	1A
PETER'S DRIVE-IN CLEANERS LTD	1094 ADELAIDE	LONDON	ON	N5Y2N1	5194335421	1A
POLAR CLEANERS	2A-1472 HURON	LONDON	ON	N5V2E5	5194517777	1A
POLAR CLEANING	380 ALBERT	STRATHROY	ON	N7G1W7	5192452133	1A
POWERS CLEANERS	819 DUFFERIN	WALLACEBURG	ON	N8A2V5	5196272741	1A
PRYDE CLEANERS	243 WELLINGTON	LONDON	ON	N6B2L2	5194398451	1A
PURR-FECTION CLEANERS	285 QUEEN	WOODSTOCK	ON	N4S1L8	5195398383	1A
QUALITY DRY CLEANERS	10 HAWTHORNE	LONDON	ON	N6G2H5	5194727776	1A
REGENCY CLEANERS	704 FELIX	WINDSOR O	ON	N9C3K8	5192565485	1A
RIVARD CLEANING SERVICE	1468 UNIVERSITY W	WINDSOR O	ON	N9B1B7	5192541176	1A
SARA'S ALTERATIONS DRY CLEANING & SHOE REPAIR	1161 LESPERANCE	TECUMSEH	ON	N8N1X3	5197350444	1A
SINTZEL CLEANERS	89 WHARNCLIFFE S	LONDON	ON	N6J2K2	5194327509	1A
SKETCHLEY CLEANERS	706 DUNDAS	WOODSTOCK	ON	N4S1E7	5195398012	1A
SKETCHLEY CLEANERS	88 JOHN S	AYLMER	ON	N5H2C4	5197738410	1A
SKETCHLEY CLEANERS	1548 DUNDAS STREET E	LONDON	ON	N5W3C1		1A
SPEED QUEEN LAUNDRY & DRY CLEANING	135 WALLACE S	LISTOWEL	ON	N4W1Y1	5192912720	1A
SPEED QUEEN TAWCO DRY CLEANING	SPRINGBANK PLAZA	WOODSTOCK	ON	N4S7K3	5195392952	1A
SPENCER CLEANERS	2861 WHELPTON	WINDSOR O	ON	N8Y1W1	5192527624	1A
SPOTLESS DRY CLEANERS	1468 UNIVERSITY W	WINDSOR O	ON	N9B1H7	5192521103	1A
ST CLAIR DRY KLEANERS	818 COLBORNE	SARNIA	ON	N7T6V8	5193449125	1A
STAR COMMERCIAL LAUNDRY & DRY CLEANING	4 STUART	LONDON	ON	N5Y1S1	5194553690	1A
SUN RAY CLEANERS (LONDON) INC	318 OAKLAND	LONDON	ON	N5W4J4	5194519140	1A
SUPER SERVICE CLEANERS	725 NOTRE DAME DR	LONDON	ON	N6J3V5	5196812425	1A
TAWCO CLEANERS	THAMES-LEA PLAZA	CHATHAM	ON	N7C1C5	5193546039	1A

Dry Cleaners

BUSINESS NAME	ADDRESS	COMMUNITY	PRO	PAC	TELEPHONE	REGION
TAWEO CLEANING CENTRE	327 ERIE	STRATFORD O	ON	N5A2N1	5192714011	1A
TEXMAIN CLEANERS & SHIRT LAUNDERERS	326 SPRINGBANK DR	LONDON	ON	N6J1G5	5194710270	1A
THE OTHER ALTERNATIVE DRYCLEANERS & SHIRT	123 WATERLOO S	STRATFORD O	ON	N5A4R3	5192732040	1A
TOPS DRY CLEANERS	1464 ADELAIDE N	LONDON	ON	N5X1K4	5194387764	1A
TRAHER'S DRY CLEANING SERVICES	1153 WESTERN RD	LONDON	ON	N6G1G6	5194322190	1A
WALLACEBURG CLEANERS	1140 DUFFERIN	WALLACEBURG	ON	N8A2W1	5196278850	1A
WALTERS' CLEANERS LTD	134 THOMPSON	LONDON	ON	N5Z2Y6	5194349771	1A
WESTSIDE DRY CLEANERS	125 14 ST W	OWEN SOUND	ON	N4K3X6	5193710500	1A
WHITE OWL CLEANERS & LAUNDROMAT	SHERWOOD FOREST MALL	LONDON	ON	N6G2V9	5194720500	1A
YORK CLEANERS	540 YORK	LONDON	ON	N6B1R5	5194381246	1A
AMBASSADOR SHOE REPAIRS & DRYCLEANING	2397 TECUMSEH	WINDSOR	ON		5192536491	1
ARGO CLEANERS	2515 DOUGALL	WINDSOR	ON		519 9692985	1
DAISY FRESH DRYCLEANERS	153 CH MEIER BL	STRATFORD	ON		519 2711322	1
DE LUXE CLEANERS & LAUNDERERS	CENTRE	CHATHAM	ON		519 3522250	1
IXL CLEANERS LTD	DOMINION BL. & GRAND MARAIS	WINDSOR	ON		5199663112	1
MASTER CLEANERS	1920 DUNDAS	LONDON	ON		519 4534565	1
NORGE CLEANING CENTRE	1265 HIGHBURY	LONDON	ON		519 4517330	1
TRAHER'S DRYCLEANING	MASONVILLE PLACE	LONDON	ON		519434 8969	1

Dry Cleaners

BUSINESS NAME	ADDRESS	COMMUNITY	PRO	PAC	TELEPHONE	REGION
** 1B						
AYLMER CLEANERS LTD	169 MAIN	WEST LORNE	ON	NOL2P0	5197681310	1B
BERT'S CLEANERS	14 TROWBRIDGE ST W	MEAFORD	ON	N0H1Y0	5195381100	1B
BLENHEIM CLEANERS	72 TALBOT W	BLENHEIM	ON	N0P1A0	5196763749	1B
BRUCE CLEANERS	807 QUEEN	KINCARDINE	ON	N0G2G0	5193962473	1B
CARM'S CLEANERS	31 STOVER S	NORWICH	ON	N0J1P0	5198632619	1B
CASCADE DRY CLEANERS & LAUNDERERS	34 WATER S	ST MARYS	ON	N0M2V0	5192841390	1B
CASE CLEANERS	291 MAIN	WATFORD	ON	N0M2S0	5198762802	1B
CLINTON DRY CLEANERS	158 BEECH	CLINTON	ON	N0M1L0	5194827064	1B
COMMUNITY CLEANERS	113 HAMILTON RD	DORCHESTER	ON	N0L1G0	5192680533	1B
COMMUNITY CLEANERS & SHIRT LAUNDRY	41 MAIN W	RIDGETOWN	ON	N0P2C0	5196743656	1B
DOUGLAS CLEANERS	216 GODERICH	PORT ELGIN	ON	N0H2C0	5198326235	1B
DURHAM CLEANERS	169 GARAFRAXA S	DURHAM	ON	N0G1R0	5193692518	1B
GLENCOE MODERN CLEANERS	169 MCKELLAR	GLENCOE	ON	N0L1M0	5192873428	1B
HARRISTON DRY CLEANERS	ELORA	HARRISTON	ON	N0G1Z0	5193383332	1B
HARROW DRIVE-IN CLEANERS	VICTORIA	HARROW	ON	N0R1G0	5197384366	1B
IMAGE CLEANERS	58 ONTARIO N	GRAND BEND	ON	N0M1T0	5192388481	1B
IMAGE CLEANERS	133 ST ANDREW	MITCHELL	ON	N0K1N0	5193489422	1B
KELL'S DRY CLEANERS	1 JAMES ST	FOREST	ON	N0N1J0	5197862221	1B
LAMBETH DRY CLEANERS	54 MAIN E	LAMBETH	ON	N0L1S0	5196522815	1B
MARKDALE DRY CLEANERS	27 MAIN W	MARKDALE	ON	N0C1H0	5199862372	1B
MODERN DRY CLEANERS	101 ARCHIE	WALKERTON	ON	N0G2V0	5198813411	1B
PORT ELGIN CLEANERS	666 GODERICH	PORT ELGIN	ON	N0H2C0	5198322911	1B
SOUTHAMPTON CLEANERS	233 HIGH	SOUTHAMPTON	ON	N0H1V0	5197972117	1B
SPEED QUEEN LAUNDRY & DRY CLEANING	WELLINGTON E	MOUNT FOREST	ON	N0G2L0	5193231190	1B
THAMESVILLE DRY CLEANERS	50 LONDON	THAMESVILLE	ON	N0P2K0	5196923808	1B
TILBURY LAUNDRY & DRY CLEANERS	46 QUEEN N	TILBURY	ON	N0P2L0	5196821042	1B
TOWN & COUNTRY CLEANERS OF LAMBETH	25 MAIN E	LAMBETH	ON	N0L1S0	5196526450	1B
TROWBRIDGE CLEANING CENTRE	30 TROWBRIDGE W	MEAFORD	ON	N0H1Y0	5195384044	1B
WALKERTON DRY CLEANERS	15 VICTORIA S	WALKERTON	ON	N0G2V0	5198812320	1B
WIARTON DRY CLEANERS	638 BERFORD	WIARTON	ON	N0H2T0	5195341670	1B
WINGHAM DRIVE-IN CLEANERS	11 DIAGONAL RD	WINGHAM	ON	N0G2W0	5193573750	1B

Dry Cleaners

BUSINESS NAME		ADDRESS	COMMUNITY	PRO	PAE	TELEPHONE	REGION
** 2A							
3-V CLEANERS		721 1/2 BARTON E	HAMILTON	ON	L8L3A7	4165454633	2A
ALADDIN DRY CLEANING & SHIRT	LAUNDRY	122 KENT	KITCHENER	ON	N2M3T9	5197450452	2A
BARTH'S CLEANING CENTRE		1 TOWNLINE	ORANGEVILLE	ON	L9W3W4	5199418370	2A
BAYER DRY CLEANING & DYERS		137 OTTAWA N	HAMILTON	ON	L8H3Z2	4165445000	2A
BEELINE CLEANERS LTD		211 LANARK ST	STONEY CREEK	ON	L8E2Z9	4165600101	2A
BESTLAKE DRYCLEANERS-TAILOR		253 LAKE ST, UNIT 7	ST CATHARINES	ON	L2N4H5	4169354401	2A
BESTWAY CLEANERS		1300 GARTH	HAMILTON	ON	L9C5V3	4163871312	2A
BEVERLY SQUARE CLEANERS &	LAUNDROMAT	215 BEVERLY	GALT	ON	N1R3Z9	5196230207	2A
BLUE MOUNTAIN DRY CLEANERS		136 PINE	COLLINGWOOD	ON	L9Y2N9	7054452811	2A
BOWES HERB CLEANERS LTD		25 KING W	DUNDAS	ON	L9H1T5	4166277222	2A
BRIGHT CLEANERS		2500 BARTON E	HAMILTON	ON	L8E4A2	4165605294	2A
BRITANNIA CLEANERS & SHIRT	LAUNDERERS	17 KING E	STONEY CREEK	ON	L8G1J7	4166624971	2A
BRONTE CLEANERS LTD		327 BRONTE S	MILTON	ON	L9T4A4	4168781163	2A
BRUCEDALE CLEANERS LTD		732 UPPER JAMES	HAMILTON	ON	L9C3A2	4163899531	2A
MANOR CLEANERS		CARRINGTON PLAZA	ST CATHARINES	ON		4166460815	2A
BURTOL CLEANERS SIMCOE		679 NORFOLK N	SIMCOE	ON	N3Y3T9	5194260935	2A
CAMBRIDGE CLEANERS		6 PRETORIA	GALT	ON	N1R5C4	5196233231	2A
CAMEO CLEANERS		1255 DUNSMURE RD	HAMILTON	ON	L8H1L7	4165456772	2A
CAMPUS ESTATES CLEANING CENTRE		35 HARVARD	GUELPH	ON	N1G3A2	5198367880	2A
CARLETON CLEANERS		809 VICTORIA N	KITCHENER	ON	N2B3C3	5195780470	2A
CHIPPAWA DRY CLEANERS &	TAILORS	3826 MAIN	NIAGARA FALLS	ON	L2G6B2	4162953451	2A
CITY LAUNDRY & CLEANERS	HAMILTON LTD	525 PARKDALE N	HAMILTON	ON	L8H5Y6	4165475120	2A
CLEANING VILLAGE COIN LAUNDRY	& DRY CLEANING	57 WILLOW	GUELPH	ON	N1H1W3	5198224441	2A
CLEANOL SERVICES LTD		590 CONCESSION	HAMILTON	ON	L0V1B3	4165230231	2A
CLEANTEX SERVICES INC		34 WILSON W	ANCASTER	ON	L9G1N2	4166481125	2A
COLONIAL CLEANERS		6495 LUNDY'S LN	NIAGARA FALLS	ON	L2G1T9	4163542278	2A
COMET DRIVE-IN DRY CLEANERS	& FORMAL RENTALS	310 BROAD E	DUNNVILLE	ON	N1A1G3	4167747321	2A
COSMOS DRYCLEANING		399 GREENHILL	HAMILTON	ON	L8K6N5	4165600730	2A
COUNTRY CLEAN LAUNDROMAT &	DRYCLEANING	67 CHARING CROSS	BRANTFORD	ON	N3R2H4	519752869_	2A
COUNTRY CLUB CUSTOM DRY	CLEANERS	TOWERS PLAZA	ST CATHARINES	ON	L2M3_	4169349452	2A
COUNTRY CLUB LAUNDROMAT & DRY	CLEANING SERVICES	LAKEPORT SQUARE	ST CATHARINES	ON	L2N4K5	4169341825	2A
COUNTY COURT CLEANING CENTRE		371 ERAMOSA	GUELPH	ON	N1E2N1	5198360777	2A
CROWN CLEANERS		1050 PARAMOUNT DR	HAMILTON	ON	L8J1P8	4165602894	2A
CROWN CLEANERS INC		728 BELMONT W	KITCHENER	ON	N2M1P2	5197451850	2A
CRYSTAL LAUNDRY AND DRY	CLEANERS	94 MAIN	DUNDAS	ON	L9H2R1	4166288052	2A
DELTA CLEANERS		1133 MAIN E	HAMILTON	ON	L8M1P2	4165444575	2A
EDINBURGH CLEANERS		165 EDINBURGH N	GUELPH	ON	N1H5R6	5198366991	2A
EUROCLEAN CANADA INC		866 LANG'S DR	CAMBRIDGE	ON	N3H2N7	5196538880	2A
EXECUTIVE CLEANERS		707 BELMONT W	KITCHENER	ON	N2M1P1	5197437931	2A
FABRIC CARE CLEANERS		8 FACER	ST CATHARINES	ON	L2M5G9	4169373552	2A
FAMILY CLEANERS		91 JAMES N	HAMILTON	ON	L8R2K6	4165224882	2A
FREDERICK MALL DRY CLEANERS		385 FREDERICK	KITCHENER	ON	N2H2P2	5197452830	2A
FRID DRIVE-IN CLEANERS		535 WOOLWICH	GUELPH	ON	N1H3X9	5198277651	2A
FRIENDLY CLEANERS		12-1/2 JAMES N	HAMILTON	ON	L8R2J9	4165291236	2A
G & C CLEANERS		72 MCANULTY	HAMILTON	ON	L8H3H1	4165440534	2A
G & M DRY CLEANING		121 QUEENSTON	ST CATHARINES	ON	L2R2Z6	4166881800	2A
GALLOWAY'S GARMENT CARE		189 ERIE	BRANTFORD	ON	N3S2G8	5197537344	2A
GARDEN CITY LAUNDRY & DRY	CLEANING (1984)	65-113 BUSHMAN	ST CATHARINES	ON	L2M6S9	4166856494	2A
GEORGIAN CLEANING CENTRE		345 FIRST	COLLINGWOOD	ON	L9Y1B3	7054457533	2A
GOSLING CLEANERS		6130 FRANKLIN	NIAGARA FALLS	ON	L2G4Z3	4163589622	2A
HAMILTON DRY CLEANERS		552 MAIN E	HAMILTON	ON	L8M1H9	4165295022	2A
HERB BOWES CLEANERS LTD		25 KING ST W	DUNDAS	ON	L9H1T5	4166277222	2A
HERITAGE CLEANERS		6225 LUNDY S LN	NIAGARA FALLS	ON	L2G1T5	4163574533	2A
HUBBARD BROTHERS DRY CLEANING & TAILORS		62 AINSLIE S	GALT	ON	N1R3K3	5196214040	2A

Dry Cleaners

BUSINESS NAME	ADDRESS	COMMUNITY	PRO	PAC	TELEPHONE	REGION
IDEAL CLEANERS	14 RIAHL	BRANTFORD	ON	N3T4P1	5197524121	2A
IMPERIAL CLEANERS & TAILORS	STAMFORD GREEN SHOPPING CENT	NIAGARA FALLS	ON	L2J2K5	4163560736	2A
JESSOP'S SPEEDY CLEANERS (1984) LTD	62 ONTARIO N	KITCHENER	ON	N2H4Y4	5197421404	2A
JUBILEE CLEANERS	447 MAIN E	HAMILTON	ON	L8N1K1	4165281979	2A
KING CLEANERS	49 GORDON	GUELPH	ON	N1H4H2	5198245464	2A
KING-WEST LAUNDRY & DRY CLEANERS	374 KING W	HAMILTON	ON	L8P1B3	4165296140	2A
KINGSDALE CLEANING CENTRE	976 1/2 KING E	HAMILTON	ON	L8M1C4	4165493395	2A
KNIGHT'S DRY CLEANERS	300 MAIN E	MILTON	ON	L9T1P3	4168789941	2A
LAKE CARLTON CLEANERS	149 CARLTON	ST CATHARINES	ON	L2R1S5	4166850933	2A
LANGLEY PARISIAN LIMITED	12 WALNUT S	HAMILTON	ON	L8N2K7	4165224651	2A
LYONS DRY CLEANERS	231 HURONTARIO	COLLINGWOOD	ON	L9Y2M1	7054453851	2A
MACINTOSH DRY CLEANERS LTD	130 VICTORIA S	KITCHENER	ON	N2G2B5	5197424461	2A
MAIN & SHERMAN COIN LAUNDRY & DRY CLEANERS	728 MAIN E	HAMILTON	ON	L8M1K9	4165457552	2A
MANOR CLEANERS LTD	5-316 LAKE	ST CATHARINES	ON	L2N4H4	4166460456	2A
MARKHAM'S CLEANERS	151 JAMES S	HAMILTON	ON	L8P2Z5	4165271411	2A
MARTINIZING	694 WOOLWICH	GUELPH	ON	N1H3Z1	5198226100	2A
MARTINIZING DRY CLEANERS	274 GENEVA	ST CATHARINES	ON	L2N2E8	4169377550	2A
MASTER DRY CLEANING & COIN LAUNDRY	79 ELGIN N	GALT	ON	N1R5H4	5196217180	2A
MAUCH'S COUNTRY CLEANERS	115 CHRISTOPHER DR	GALT	ON	N1R4S1	5196238711	2A
MIDTOWN CLEANERS	MIDTOWN PLAZA	ST CATHARINES	ON	L2R2M2	4166825220	2A
MIKE'S DRY CLEANERS	176 JAMES N	HAMILTON	ON	L8R2L1	4165275340	2A
MILTON DRY CLEANERS	127 COMMERCIAL	MILTON	ON	L9T2J1	4168789262	2A
MODERN CLEANERS	112 LAKE	ST CATHARINES	ON	L2R5X8	4166854202	2A
MOROCCO CLEANERS	6886 DRUMMOND	NIAGARA FALLS	ON	L2G4P3	4163547539	2A
NEIGHBOURHOOD LAUNDRY & DRY CLEANING	160 CENTENNIAL PKWY N	HAMILTON	ON	L8E1H9	4165613530	2A
NEW LOOK DRY CLEANING & LAUNDRY	209 LEXINGTON	KITCHENER	ON	N2K2E1	5198842340	2A
NEW ROYAL CLEANERS & LAUNDROMAT	175 TOWER N	FERGUS	ON	N1M1N9	5198432840	2A
NEWTEX LTD	310-A KING E	PRESTON	ON	N3H3N8	5196538294	2A
NIAGARA FALLS DRY CLEANERS	6182 DIXON	NIAGARA FALLS	ON	L2G2L6	4163566720	2A
ONE HOUR DRY CLEANERS	5060 VICTORIA	NIAGARA FALLS	ON	L2E4E1	4163545869	2A
ONE-HOUR MARTINIZING	42 JAMES N	HAMILTON	ON	L8R2K1	4165287749	2A
PALMER CLEANING CENTRES	666 WOOLWICH	GUELPH	ON	N1H7G5	5198364080	2A
PARIS CLEANING CENTRE	1 GRAND RIVER S	PARIS	ON	N3L2L9	5194426080	2A
PARKDALE CLEANERS	237 PARKDALE N	HAMILTON	ON	L8H5X4	4165440054	2A
PARKERS CLEANERS LTD	22 SUFFOLK E	GUELPH	ON	N1H2N8	5198240421	2A
PARKWAY DRY CLEANERS	247 CENTENNIAL PKWY N	HAMILTON	ON	L8E2X3	4165610304	2A
PEERLESS CLEANERS LTD	226 HEAD N	SIMCOE	ON	N3Y3X7	5194262675	2A
PERFECTION CLEANERS	500 ELIZABETH	GUELPH	ON	N1E6C1	5198242080	2A
PIKE DRY CLEANERS	286 LAKE	ST CATHARINES	ON	L2N4H2	4169351133	2A
PIKE DRY CLEANERS & SHIRT LAUNDERERS	93 JARVIS	FORT ERIE	ON	L2A2S3	4168711570	2A
PIONEER CLEANERS LTD	854 UPPER JAMES	HAMILTON	ON	L9C3A4	4163833113	2A
PIONEER CLEANERS LTD	151 KING GEORGE RD	BRANTFORD	ON	N3R5K7	5197563020	2A
PORTER'S DRY CLEANING SERVICES	1360 MAIN E	HAMILTON	ON	L8K1B7	4165450915	2A
PRESTIGE CLEANING	207 KING S	KITCHENER	ON	N2J1R1	5197441107	2A
PRESTON CLEANERS	134 WESTMINSTER DR N	PRESTON	ON	N3H1S2	5196536209	2A
PROFESSIONAL CLEANERS	180 JAMES S	HAMILTON	ON	L8P3A7	4165219433	2A
QUEENSTON CLEANING CENTRE	640 QUEENSTON RD	HAMILTON	ON	L8K1K2	4165601717	2A
R AND D CLEANERS LIMITED	15 TOWPATH	ST CATHARINES	ON	L2V2P5	4162272101	2A
REESE DRY CLEANING	162 VICTORIA S	KITCHENER	ON	N2G2B5	5195765260	2A
REID CLEANERS	150 HARTZEL	ST CATHARINES	ON	L2P1N9	4166851879	2A
ROYAL CLEANERS	GUELPH SHOPPING CENTRE	GUELPH	ON	N1E1N0	5198245432	2A
ROYAL PROFESSIONAL DRY CLEANERS	128 KING	ST CATHARINES	ON	L2R3J1	4166821423	2A
S & S COIN LAUNDRY & DRY CLEANING	225 FAIRVIEW DR	BRANTFORD	ON	N3R7E3	5197539900	2A
SAUDERS DRY CLEANERS & LAUNDROMATS	120 OTTAWA N	KITCHENER	ON	N2H3K4	5197431362	2A
SEAFARK INDUSTRIAL DRY CLEANERS LTD	147 COSHMAN	ST CATHARINES	ON	L2M6T2	4166881671	2A

Dry Cleaners

BUSINESS NAME	ADDRESS	COMMUNITY	PRO	FAC	TELEPHONE	REGION
** 2R						
BURTOL CLEANERS	MAIN	PORT DOVER	ON	N0A1N0	5195830911	2R
CAMELOT CLEANERS & SHIRT LAUNDERERS	4 MAIN	ST GEORGE	ON	N0E1N0	5194481414	2R
CANADIAN CHEMICAL CLEANING SERVICE	442 6TH CONCESSION ROAD E	MILLGROVE	ON	L0R1V0	4166395510	2R
FOUR SEASONS DRY CLEANERS	307 ARGYLE S	CALEDONIA	ON	N0A1A0	4167654475	2R
HERITAGE CLEANERS	111 HWY 20 E	PELHAM	ON	L0S1C0	4168925642	2R
LIGHTHEART CLEANERS INC	203 RIDGE N	RIDGEWAY	ON	L0S1N0	4168945553	2R
NEW HAMBURG DRY CLEANERS	161 PEEL	NEW HAMBURG	ON	N0B2G0	5196621221	2R
PIONEER CLEANERS	WATERDOWN SHOPPING PLAZA	WATERDOWN	ON	L0R2H0	4166897451	2R
SERVICE DRY CLEANERS	GRIFFIN N	WEST LINCOLN	ON	L0R2A0	4169573339	2R
SPRINGWATER COIN LAUNDROMAT & DRY CLEANING	521 WYANDOTTE E	WINDSOR O	ON	N0A3J1	5192564284	2R
TONY'S SHOE REPAIR & DRY CLEANING SERVICE	244 DUNDAS E	WATERDOWN	ON	L0R2H0	4166896152	2R
TOP HAT CLEANERS	72 KING E	BEAMSVILLE	ON	L0R1B0	4165634342	2R

Dry Cleaners

BUSINESS NAME	ADDRESS	COMMUNITY	PRO	PAC	TELEPHONE	REGION
SELECT CLEANERS	478 WOODLAWN E	GUELPH	ON	N1E1R9	5198214430	2A
SIDOFF'S CLEANERS & TAILORS	5992 LUNDY'S LN	NIAGARA FALLS	ON	L2G1T1	4163547621	2A
SKETCHLEY CLEANERS	324 HIGHLAND W	KITCHENER	ON	N2M3C5	5197429521	2A
SMART CLEANERS & SHIRT LAUNDERERS LTD	49 FERGUSON N	HAMILTON	ON	L8R1L2	4165283938	2A
SMARTEX DRY CLEANERS	50 KENNEDY S	BRAMPTON	ON	N3R2C6	4164560418	2A
SMARTEX DRY CLEANERS	464 STEELES AV W	MILTON	ON	L9T3P7	4168785283	2A
SPEED QUEEN LAUNDROMAT & DRYCLEANING	339 KING E	KITCHENER	ON	N2G2L2	5197457621	2A
STAR CLEANERS	CENTURY 21	HAMILTON	ON	L8N3W4	4165277553	2A
STARLITE DRY CLEANERS	132 WESTMINSTER DR S	PRESTON	ON	N3H1S8	5196536571	2A
STEWART CLEANERS	23 WELLINGTON E	GUELPH	ON	N1H3R7	5198216087	2A
STOP AND CLEAN DRY CLEANERS	424 ABERDEEN	HAMILTON	ON	L8P2S2	4165276924	2A
STOFFS CLEANERS LTD	547 MAIN E	MILTON	ON	L9T3J2	4168764245	2A
SUNNY SUDS CLEANING CENTRE	1000 UPPER GAGE	HAMILTON	ON	L8V4R5	4163879841	2A
SUNSHINE CENTRE	1123 KING E	HAMILTON	ON	L8M1E5	4165444953	2A
TAWCO CLEANING CENTRE	1440 MAIN E	HAMILTON	ON	L8K6H3	4165470164	2A
TAWCO CLEANING CENTRES	GLENRIDGE PLAZA	KITCHENER	ON	N2J4H7	5198842874	2A
TOMCO SERVICES	5059 PALMER	NIAGARA FALLS	ON	L2E3T9	4163541661	2A
TOP HAT CLEANERS	97 ALFRED	BRANTFORD	ON	N3S5J1	5197523686	2A
TOP QUALITY DRY CLEANERS	223 KING W	KITCHENER	ON	N2G1B1	5197426781	2A
VILLAGE CLEANING CENTRE	55 ST PAUL W	ST CATHARINES	ON	L2S2C4	4166823255	2A
WENTWORTH CLEANERS	658 KING E	HAMILTON	ON	L8N1E7	4165223893	2A
WESTLAKE DRY CLEANERS & TAILOR	7-353 LAKE	ST CATHARINES	ON	L2N4H5	4169354401	2A
WHITE TOWER DRY CLEANERS	625 GREENHILL	HAMILTON	ON	L8K5W9	4165612611	2A
WILLARD'S DRY CLEANERS	46 QUEEN W	HESPELER	ON	N3C2A8	5196582361	2A
WRIGHT'S CITY LAUNDRY & CLEANERS HAMILTON LTD	143 HWY 8	STONEY CREEK	ON	L8N1C1	4166644651	2A
YORK CLEANERS	179 YORK	ST CATHARINES	ON	L2R6G3	4166858445	2A
ZORRO ONE HOUR DRY CLEANERS	236 OTTAWA N	HAMILTON	ON	L8H3Z7	4165457788	2A
Newtex Ltd	136 Ottawa St S	Kitchener	ON	N2G3T1	5197420932	2A
Newtex Ltd	150 Duke W	Kitchener	ON	N2H3X1	519 7431742	2A
Langley Parisian Ltd	1009 King W	Hamilton	ON	L8S1L3	416 5271607	2A
Langley Parisian Ltd	854 Lawrence	Hamilton	ON	L8K 2A7	416 5453868	2A
LANGLEY PARISIAN LTD	UNIVERSITY PLAZA	DUNDAS	ON	L9H2K7	4166270361	2A
NEWTEX LTD	FOREST GLEN PLAZA	KITCHENER	ON		5197421641	2A
PRESTIGE CLEANING	WESTMOUNT PLAZA	KITCHENER	ON		5198867960	2A
REESE DRYCLEANING	450 WESTHEIGHTS DR	KITCHENER	ON		5195785940	2A

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Dry Cleaners

BUSINESS NAME	ADDRESS	COMMUNITY	PRO	PAC	TELEPHONE	REGION
** 3A						
'OUR CLEANERS	7 COLBORNE E	ORILLIA	ON	L3V1T4	7053265625	3A
ABLE CLEANERS	329 LAKESHORE RD E	PORT CREDIT	ON	L5G1H3	4162788121	3A
ACADIAN CLEANERS	299 BLOOR W	OSHAWA	ON	L1J1R1	4167285141	3A
ACE-KELLY DRY CLEANERS	1900 DUNDAS W	CLARKSON	ON	L5K1P9	4168237011	3A
ACTON FAMILY CLEANERS	348 QUEEN	ACTON	ON	L7J1R2	5198532310	3A
ADMIRAL CLEANERS & SHOE REPAIRS	9218 YONGE	THORNHILL	ON	L4J1X5	4168861147	3A
ALBRIGHT DRY CLEANING LAUNDROMAT & SHOE REPAIR	AURORA SHOPPING CENTRE	AURORA	ON	L4G1N9	4167278288	3A
ALPHA QUALITY CLEANERS	1203 HURONTARIO	PORT CREDIT	ON	L5G3H8	4162789700	3A
ALPHA-CARE CLEANING	2869 BATTLEFORD	STREETSVILLE	ON	L5N2S6	4168219440	3A
ANGIE'S DRY CLEANERS	5920 TURNEY DR	STREETSVILLE	ON	L5N2R8	4168587488	3A
ASCOT CLEANERS	239 QUEEN E	BRAMPTON	ON	L6W2B6	4164514350	3A
B & M DRY CLEANERS & TAILORS	21 SOUTHWORTH N	WELLAND	ON	L3B1X8	4167344270	3A
BARRAGER'S CLEANERS	166 GUELPH	GEORGETOWN	ON	L7G4A6	4168772279	3A
BARIN'S CLEANING CENTRE	83 DAVIS DR	NEWMARKET	ON	L3Y2M9	4168535541	3A
BAYLY CLEANERS	2-1397 HARWOOD N	AJAX	ON	L1S2C1	4164278507	3A
BAYLY CLEANERS	736 ABINGDON STREET	PICKERING	ON	L1W3M7		3A
BETTY BRITE CLEANERS	P.O. BOX 797	OSHAWA	ON	L1G6Z6		3A
BETTY BRITE DRY CLEANERS	1120 SIMCOE N	OSHAWA	ON	L1G4W6	4164347760	3A
BOWMANVILLE CLEANERS (1973) LTD	84 KING W	BOWMANVILLE	ON	L1C1R4	4166235520	3A
BRIDLEWOOD CLEANERS	2155 LEANNE BLVD	CLARKSON	ON	L5K2K8	4168234343	3A
BRISTOL CLEANERS	165 WELLINGTON W	BARRIE	ON	L4N1L7	7057260101	3A
BRITANNIA CLEANERS	33 ELM	GRIMSBY	ON	L3M3G5	4169452726	3A
BURGER ST LAUNDROMAT & DRY CLEANING	183 BURGER	WELLAND	ON	L3B2T3	4167880044	3A
BURLINGTON DRY CLEANERS	366 BRANT	BURLINGTON	ON	L7R2E8	4166342319	3A
BURTOL CLEANERS	365 WESTWOOD DR	COBOURG	ON	K9A4M5	4163725145	3A
BURTOL DRY CLEANERS	186 GEORGE N	PETERBOROUGH	ON	K9J3G5	7057428181	3A
CAMBRIDGE CLEANERS	3437 FIELDGATE DR	MISSISSAUGA	ON	L4X2J4	4166251877	3A
CAMEO CLEANERS	612 LAKESHORE RD E	PORT CREDIT	ON	L5G1J*	4162746412	3A
CARDINAL CLEANERS LTD	1545 DUNDAS E	WHITBY	ON	L1N2K6	4164301616	3A
CENTRE PLAZA LAUNDROMAT & CLEANERS	206 WELLINGTON W	MARKHAM	ON	L3T1B7	4164715247	3A
CHAMPLAIN CLEANERS LIMITED	2 FRONT S	ORILLIA	ON	L3V4R9	7053253333	3A
CHORNDALE CLEANERS	10 ROYAL ORCHARD BLVD	THORNHILL	ON	L3T3C3	4168898555	3A
CHRIS CLEANERS	1585 MISSISSAUGA VALLEY	COOKSVILLE	ON	L5A3R8	4162701775	3A
CLARKSON CLEANERS	1860 LAKESHORE RD W	CLARKSON	ON	L5J1J7	4168229241	3A
CLEAN TEAM DRY CLEANERS	861 DENISON	UNIONVILLE	ON	L3R3E6	4164740990	3A
CLEANERS PALACE THE	1185 DUNDAS E	COOKSVILLE	ON	L4Y2C6	4162772212	3A
CLEANTEX	GRIMSBY SQUARE PLAZA	GRIMSBY	ON	L3M1K9	4169451214	3A
CLIFFCREST CLEANERS	38 KING E	BOWMANVILLE	ON	L1C1N2	4166237061	3A
CLIFFWAY DRY CLEANERS & SHIRT LAUNDRY LTD	2041 CLIFF	COOKSVILLE	ON	L5A3N8	4162778886	3A
CLOTHING CARE CLEANERS	2025 UPPER MIDDLE	BURLINGTON	ON	L7P4K1	4163353135	3A
COLONIAL CLEANERS	301 THOROLD	WELLAND	ON	L3C6H5	4167326056	3A
COMMAND CLEANERS	2 DERSINGHAM CR	THORNHILL	ON	L3T4E7	4168810525	3A
COTTY'S CLEANERS LTD	217 DUNLOP E	BARRIE	ON	L4M1B2	7057260259	3A
COUNTRY CLUB CLEANER	3415 DIXIE RD	COOKSVILLE	ON	L4Y2B1	4166252311	3A
CRONIN CLEANERS	4335 BLOOR W	TORONTO	ON	L5A3S6	4166222898	3A
CUNDLES CLEANERS & COIN LAUNDRY	11 CUNDLES W	BARRIE	ON	L4N1R2	7057262484	3A
DAISY FRESH CLEANERS & LAUNDERERS	DIXIE RD & DUNDAS E	COOKSVILLE	ON	L4Y2A6	4162774281	3A
DAISY FRESH CLEANERS & LAUNDERERS	18 QUEEN E	BRAMPTON	ON	L6V1A2	4164590925	3A
DEEP STEAM EXTRACTION OF PETERBOROUGH	880 COCHRANE CR	PETERBOROUGH,	ON	K9H5N3	7057423000	3A
DENISE CLEANERS & LAUNDERERS	2213 BOSTOCK CR	CLARKSON	ON	L5J3S8	4168226712	3A
DENNIS CLEANERS	114 BURIN DR	WHITBY	ON	L1N1X8	4166661312	3A
DENNIS' DRY CLEANING	316 MAIN N	MARKHAM	ON	L3P1Z1	4162941962	3A
DION'S LAUNDRY & DRYCLEANING	516 YONGE	MIDLAND	ON	L4R2C5	7055265436	3A

Dry Cleaners

BUSINESS NAME	ADDRESS	COMMUNITY	PRO	PAC	TELEPHONE	REGION
DIRECT CLEANERS	1107 LORNE PARK RD	PORT CREDIT	ON	L5H3A1	4162781976	3A
DUNN CLEANERS	18 QUEEN	COBOURG	ON	K9A1M9	4163725134	3A
DURACLEAN MASTER CLEANERS	1295 EGLINTON E	COOKSVILLE	ON	L4W3E6	4166250289	3A
DUTCH GIRL CLEANERS	16 WILSTEAD DR	NEWMARKET	ON	L3Y4T9	4168985165	3A
EAKINS DRY CLEANING	PINEVIEW PLAZA	PORT HOPE	ON	L1A3S6	4168852466	3A
EAST MALL CLEANING CENTRE	600 KING E	OSHAWA	ON	L1H1G6	4164339682	3A
EAKINS DRY CLEANERS	123 TORONTO RD	PORT HOPE	ON	L1A3S6	4168852466	3A
ECCLESTONE CLEANERS	WESTDALE MALL	COOKSVILLE	ON	L5C1C4	4162778803	3A
ELIT CLEANERS	10 FINCHAM	MARKHAM	ON	L3P4C8	4164711140	3A
EMPIRE ONE HOUR DRY CLEANERS	178 CHARLOTTE	PETERBOROUGH	ON	K9J2T8	7057436045	3A
EMPRESS CLEANERS	277 MICHAEL BL	WHITBY	ON	L1N5R2	4166662223	3A
ERINDALE DRY CLEANING & LAUNDERING CENTRE LTD	780 BURNHAMTHORPE W	COOKSVILLE	ON	L4C3Y3	4168483939	3A
ERNIE'S CLEANING SERVICE LTD	417 BETHUNE	PETERBOROUGH	ON	K9H3Z1	7057423308	3A
FAIRVIEW CLEANERS	8175 YONGE	THORNHILL	ON	L3T2C6	4168896019	3A
FERGUSON CLEANERS LTD	261 CHARLOTTE	PETERBOROUGH	ON	K9J2V3	7057433682	3A
FERGUSON'S CLEANERS LTD	128 HUNTER STREET E	PERTERBOROUGH	ON	K9H1G6	7057459031	3A
FINE QUALITY DRYCLEANERS	144 KENNEDY S	BRAMPTON	ON	L6W3G4	4164548777	3A
FLOWERTOWN CLEANERS & LAUNDERERS	210 QUEEN E	BRAMPTON	ON	L6V1B7	4164516950	3A
FRENCH DRY CLEANERS	479 DOMINION	MIDLAND	ON	L4R1P5	7055266421	3A
GLEEM CLEANERS	94 KING W	COBOURG	ON	K9A2M3	4163722131	3A
GRAINGER'S CLEANERS	885 LANSDOWNE W	PETERBOROUGH	ON	K9J1Z5	7057423831	3A
HARBOURFRONT LAUNDROMAT	127 GEORGE N	PETERBOROUGH	ON	K9J3G3	7057421028	3A
HARWOOD MARTINIZING	94 HARWOOD S	AJAX	ON	L1S2H6	4166832212	3A
HERITAGE CLEANERS	21 WOOTTEN WAY N	MARKHAM	ON	L3P2Y2	4162949105	3A
HIGHLANDER DRY CLEANING AND LAUNDROMAT	340 THOROLD	WELLAND	ON	L3C3W4	4167351271	3A
HOWDEN CLEANERS	375 HOWDEN	BRAMPTON	ON	L6S4L6	4164544770	3A
HUTONE CLEANERS	14 STAVEBANK N	PORT CREDIT	ON	L5G2T4	4162788363	3A
J & C DRY CLEANERS	2 PHILOSOPHERS TRAIL	BRAMPTON	ON	L6S4C9	4167916760	3A
J & P CLEANERS	3233 BRANDON GATE DR	MALTON	ON	L4T3V8	4166780178	3A
J M CLEANERS	1134 CLARKSON N	CLARKSON	ON	L5J2V9	4168222602	3A
JEFFERSON CLEANERS INC	50 TAUNTON E	OSHAWA	ON	L1G3T7	4164346160	3A
K & M CLEANERS	112 COLBORNE W	WHITBY	ON	L1N1X1	4166682831	3A
KENT CLEANERS	147 KENT W	LINDSAY	ON	K9V2Y5	7053242181	3A
KINGSBURY ONE HOUR CLEANERS	1891 RATHBURN E	COOKSVILLE	ON	L4W3Z3	4166243610	3A
LAKEVIEW CLEANERS	743 LAKESHORE RD E	PORT CREDIT	ON	L5E1C6	4162783411	3A
LANGFORD CLEANERS	339 KERR	OAKVILLE	ON	L6K3B7	4168454281	3A
LIGHTHEART'S DRIVE-IN CLEANERS	388 KING	PORT COLBORNE	ON	L3K4N4	4168349202	3A
LINDSAY DRY CLEANERS	211 KENT W	LINDSAY	ON	K9V2Y9	7053242166	3A
LONDON CLEANERS	21 AMBER ST, UNIT 12	UNIONVILLE	ON	L3R4Z3	4164751350	3A
LONDON CLEANERS	1792 LIVERPOOL	SOUTH PICKERING	ON	L1V1V9	4168316535	3A
LOU'S DRY CLEANING & LAUNDRY	4021 NEW	BURLINGTON	ON	L7L1S8	4166321360	3A
LUCKY STAR CLEANERS & LAUNDERERS	361 CARRVILLE	THORNHILL	ON	L4J1V1	4168862372	3A
MADAME'S DRY CLEANERS & LAUNDRY INC	1131 NOTTINGHILL GATE	OAKVILLE	ON	L6M1K5	4168252917	3A
MALCOLM'S DRYCLEANING	12 MAIN S	NEWMARKET	ON	L3Y3Y2	4168955838	3A
MAPLE CLEANERS	68 SIMCOE N	OSHAWA	ON	L1G4S2	4167250643	3A
MAPLE LEAF CLEANERS	36 QUEEN W	BRAMPTON	ON	L6X1A1	4164511205	3A
MARATHON DRY CLEANING	60 RANDALL DR	AJAX	ON	L1V4G5	4164270807	3A
MARKHAM CLEANERS	99 WELLINGTON W	MARKHAM	ON	L3P1B1	4162942353	3A
MARLAND CLEANERS	288 MARLAND	OSHAWA	ON	L1J1X1	4165766952	3A
MARTINIZING DRY CLEANERS & LAUNDERERS	50 RAVENSCROFT DR	AJAX	ON	L1T1G5	4166861251	3A
MARTINIZING ONE HOUR	655 PARK HILL W	PETERBOROUGH	ON	K9J6H7	7057429361	3A
MCCLEANS CUSTOM CLEANERS	305 CHAROLAIS BL	BRAMPTON	ON	L6Y2R2	4164517745	3A
MCMURCHY CLEANERS	5 MCMURCHY N	BRAMPTON	ON	L6X1X4	4164562042	3A
MISSISSAUGA VALLEY DRY CLEANERS	131 DUNDAS E	COOKSVILLE	ON	L5A1W7	4162763814	3A

BUSINESS NAME		ADDRESS	COMMUNITY	PRO	PAC	TELEPHONE	REGION
MODERN DRY CLEANERS &	DRAPERIES LTD	321 OLIVE	OSHAWA	ON	L1H2P5	4167284614	3A
NETWORK CLEANERS		6415 ERIN MILLS PKWY	STREETSVILLE	ON	L5N4H4	4168588451	3A
NEW SERVICE CLEANERS		22 ONTARIO	PORT HOPE	ON	L1A2T6	4168854011	3A
NEW WAY DRY CLEANERS		5291 LAKESHORE	BURLINGTON	ON	L7L1C7	4166391234	3A
NEWMARKET CLEANERS		149 MAIN S	NEWMARKET	ON	L3Y3Y9	4168952343	3A
NORTH STAR DRY CLEANERS		55 MAIN S	GEORGETOWN	ON	L7G3G8	4168770469	3A
OAKDALE CLEANERS		420 LEACOCK DR	BARRIE	ON	L4N5G5	7057375611	3A
ODEF CLEANERS LTD		BAYVIEW PLAZA	RICHMOND HILL	ON	L4C3N8	4168845473	3A
ONE HOUR MARTINIZING		3437 FIELDGATE DR	COOKSVILLE	ON	L4X2J4	4166251877	3A
ONE HOUR MARTINIZING DRY	CLEANING	2979 UNITY GATE	STREETSVILLE	ON	L5L3E5	4168201171	3A
ONE-HOUR MARTINIZING		131 DUNDAS E	COOKSVILLE	ON	L5A1W7	4162791424	3A
ONE-HOUR MARTINIZING		106 BROCK S	WHITBY	ON	L1N4J8	4166686491	3A
ONE-HOUR MARTINIZING		1271 SIMCOE STREET N	OSHAWA	ON	L1G4X1	4165767500	3A
ONE-HOUR MARTINIZING		655 PARKHILL ROAD W	PETERBOROUGH	ON	K9J6N7	7057429361	3A
OUR DRY CLEANERS		180 INNISFIL	BARRIE	ON	L4N3E7	7057374482	3A
PARK PLAZA DRY CLEANING		73 GEORGE S	BRAMPTON	ON	L6Y1P4	4164591018	3A
PARKER'S CLEANERS		480 GUELPH LINE	BURLINGTON	ON	L7R3M1	4166342363	3A
PARKERS CLEANERS		100 CARLTON	UNIONVILLE	ON	L3R1Z9	4164772931	3A
PARKERS CLEANERS		3-750 OKLAHOMA DR	SOUTH PICKERING	ON	L1W3G9	4168311336	3A
PARKERS CLEANERS LTD		2539 DIXIE	COOKSVILLE	ON	L4Y2A1	4162700658	3A
PARKERS CLEANERS LTD		1150 LORNE PARK RD	PORT CREDIT	ON	L5H3A5	4162785331	3A
PARKERS CLEANERS LTD		10 RAMBLER DR	BRAMPTON	ON	L6W1E2	4164515955	3A
PARKERS CLEANERS LTD		120 YONGE N	AURORA	ON	L4G1P2	4167278122	3A
PARKWAY CLEANERS		30 PARK N	OSHAWA	ON	L1J4K7	4164330022	3A
PAUL'S CLEANERS		362 LAKESHORE RD W	PORT CREDIT	ON	L5H1H3	4162748471	3A
PENN ONE-HOUR DRY CLEANERS		3 MOUNTAIN	GRIMSBY	ON	L3M3J5	4169454734	3A
PICKERING CLEANERS		6 LINCOLN	AJAX	ON	L1V2B8	4166833391	3A
PICKERING MARTINIZING CLEANERS		1235 BAYLY	SOUTH PICKERING	ON	L1W1L7	4168394919	3A
PINEGROVE CLEANERS		499 PINEGROVE	OAKVILLE	ON	L6K2C2	4168421312	3A
PIONEER CLEANERS LTD		770 GUELPH LINE	BURLINGTON	ON	L7R3N5	4166327700	3A
PLATIS & SON 1 HOUR CLEANERS		2515 HURONTARIO	COOKSVILLE	ON	L5A4L8	4168967325	3A
PLATIS & SONS 1 HR CLEANERS		114 WELLINGTON W	MARKHAM	ON	L3P1B4	4162949144	3A
QUEENSWAY CLEANERS THE		268 THE QUEENSWAY S	KESWICK	ON	L4P2H3	4164767507	3A
QUICK CLEAN CENTRE		1345 KING E	OSHAWA	ON	L1H1J3	4165764573	3A
QUICKLY DISCOUNT CLEANERS		180 STEELES W	THORNHILL	ON	L3T1A5	4168860782	3A
RATHBURN 1 HOUR CLEANERS		25 JOHN	COOKSVILLE	ON	L5A1Y5	4168967580	3A
RAY'S CLEANERS		2235 HURONTARIO	COOKSVILLE	ON	L5A2G1	4162792241	3A
RIVENDELL CLEANERS		144 DUNDAS W	COOKSVILLE	ON	L5B1H8	4162708830	3A
RIVIER'S DRY CLEANING		362 KERR	OAKVILLE	ON	L6K3B8	4168444783	3A
ROBBIE'S CLEANERS & SHIRT	LAUNDERERS LTD	83 CLARENCE	BRAMPTON	ON	L6W1S5	4164511167	3A
ROCKY'S DRY CLEANING COIN	LAUNDRY & CUSTOM	651 CHAMBERLAIN	PETERBOROUGH	ON	K9J4L9	7057459851	3A
TAILOR							
ROSEDALE CLEANERS & LAUNDERERS		20 MAIN N	MARKHAM	ON	L3P1X2	4162944397	3A
ROYAL DRY CLEANERS		6120 MONTEVIDEO	STREETSVILLE	ON	L5N3W5	4168581605	3A
SCUGOG CLEANERS LIMITED		524 CROMWELL	OSHAWA	ON	L1J4V4	4167231159	3A
SEARS DRY CLEANING		637 LANSDOWNE W	PETERBOROUGH	ON	K9J7C5	7057432423	3A
SEAWAY CLEANERS		103 LAKESHORE RD E	PORT CREDIT	ON	L5G1E2	4162743116	3A
SHERIDAN DRY CLEANERS &	LAUNDERERS	27 HELENE N	PORT CREDIT	ON	L5G3G6	4162788653	3A
SHERIDAN HILL CLEANERS		1050 GRAND	OAKVILLE	ON	L6H2S5	4168450254	3A
SIMCOE PLAZA CLEANERS & COIN	LAUNDRY	303 BLAKE	BARRIE	ON	L4M1K7	7057262060	3A
SKETCHLEY CLEANERS		2500 HURONTARIO	COOKSVILLE	ON	L5B1N4	4162771161	3A
SKETCHLEY CLEANERS		130 QUEEN E	BRAMPTON	ON	L6V1B1	4164518033	3A
SKETCHLEY CLEANERS		33 THE BRIDLE TRL	UNIONVILLE	ON	L3R4E7	4164770384	3A
SKETCHLEY CLEANERS		CLOVERIDGE MALL	AJAX	ON	L1S1H1	4166834951	3A
SKETCHLEY CLEANERS		2225 ERIN MILLS PKWY	CLARKSON	ON	L5K1T9	4168225444	3A

Dry Cleaners

BUSINESS NAME	ADDRESS	COMMUNITY	PRO	FAC	TELEPHONE	REGION
SKETCHLEY CLEANERS	6677 MEADOWVALE TOWN CENTRE	STREETSVILLE	ON	L5N2R5	4168262238	3A
SMARTEX CLEANERS	2441 LAKESHORE RD W	OAKVILLE	ON	L6L1H6	4168277675	3A
SOMERSET CLEANERS INC	130 YONGE	NEWMARKET	ON	L3W6Z1	4168531555	3A
SPEED QUEEN COIN LAUNDRY & DRY CLEANING	821 CHEMONG	PETERBOROUGH	ON	K9H5Z5	7057450655	3A
STAR CLEANERS	451 GUELPH LINE	BURLINGTON	ON	L7R3L8	4166342301	3A
STREETSVILLE CLEANERS	136 QUEEN S	STREETSVILLE	ON	L5M1K8	4168211326	3A
SUDS DRY CLEANERS LTD	150 LAKESHORE RD W	PORT CREDIT	ON	L5H3R2	4162712240	3A
SUNLITE CLEANERS	4 BREMEN LN	STREETSVILLE	ON	L5M1G6	4168587899	3A
SUPER SPEED CLEAN	101 PLANCHET	THORNHILL	ON	L4K2C6	4166696184	3A
SUPERIOR DRY CLEANERS	1 MINTLEAF GATE	MARKHAM	ON	L3P4X9	4164715592	3A
THE CLEANING CENTRE	6 NELSON E	BRAMPTON	ON	L6V1C9	4164591644	3A
THRIFTY CLEANERS	31 MISSISSAGA W	ORILLIA	ON	L3V3A5	7053256623	3A
TOWN & COUNTRY CLEANERS	204 QUEEN S	STREETSVILLE	ON	L5M1L3	4168261651	3A
TRANS AM CLEANING SERVICES LTD	2 HILLBANK TRL	BRAMPTON	ON	L6S1P6	4167928402	3A
TUB CLUB DRY CLEANING & COIN LAUNDRY	757 LOCK	PETERBOROUGH	ON	K9J2Z3	7057435640	3A
TURF CUSTOM CLEANERS	APPLEWOOD VILLAGE SHOPPING C	COOKSVILLE	ON	L4Y1A6	4162771080	3A
TWIN DRIVE-IN CLEANERS LTD	781 MONAGHAN	PETERBOROUGH	ON	K9J5C2	7057435500	3A
UNITED BROTHERS CLEANING SERVICES THE	180 MISSISSAUGA VALLEY	COOKSVILLE	ON	L5A3M2	4162752794	3A
UNIVERSAL CLEANERS	1640 CRESTVIEW	PORT CREDIT	ON	L5G3P9	4162743810	3A
VADELINE CLEANERS & LAUNDRY	199 LAKESHORE RD E	PORT CREDIT	ON	L5G1G2	4162744282	3A
VADIANT CLEANERS (SIMCOE) LTD	1230 SIMCOE N	OSHAWA	ON	L1G4W6	4167281991	3A
VALET DRY CLEANERS	83 WILSON	OAKVILLE	ON	L6K3G4	4168441227	3A
VALLEY CLEANERS	53 LAKESHORE RD E	PORT CREDIT	ON	L5G1C9	4162781871	3A
VARGA'S CLEANING CENTRE	147 BELL	PORT COLBORNE	ON	L3K1H9	4168349009	3A
VICTORIA LAUNDRY & DRY CLEANING	98 RUSSELL W	LINDSAY	ON	K9V2X4	7053245322	3A
VILLAGE COIN LAUNDRY & DRY CLEANERS	20 FRED VARLEY DR	UNIONVILLE	ON	L3R1S4	4164773794	3A
WAGG'S LAUNDRY & DRY CLEANERS COMPANY LIMITED	24 ONTARIO	ORILLIA	ON	L3V6H1	7053263517	3A
WALKER'S CLEANERS	EDWARD PLAZA	AURORA	ON	L4G3M7	4167276356	3A
WEST END DRY CLEANERS & COIN- OP LAUNDROMAT	31 MISSISSAGA W	ORILLIA	ON	L3V3A5	7053252112	3A
WESTLAKE DRY CLEANERS	35 HELLENS	WELLAND	ON	L3B3A8	4167343531	3A
WESTWOOD CLEANERS LTD	4025 BRANDON GATE DR	MALTON	ON	L4T3Z9	4166735967	3A
WHEELER'S DRIVE IN CLEANERS	6-A KENNEDY S	BRAMPTON	ON	L6W3E1	4164595713	3A
WHITBY CLEANERS	104 COLBORNE E	WHITBY	ON	L1N1V8	4166682345	3A
WHITE OAK CLEANERS	2-4490 FAIRVIEW	BURLINGTON	ON	L7N5P5	4166395256	3A
WINDWOOD CLEANERS	3080 WINDWOOD DR	STREETSVILLE	ON	L5N2K5	4168589394	3A
WOODBRIDGE CLEANERS	25 BENJAMIN DR	WOODBRIDGE	ON	L4L1H8	4168512552	3A
WRIGHT CLEANERS (BARRIE) LTD	103 BAYFIELD	BARRIE	ON	L4M3A9	7057285531	3A
WRIGHT'S CITY LAUNDRY & CLEANERS	HOPEDALE MALL	OAKVILLE	ON	L6L5G8	4168274762	3A
ZORRO CLEANERS	1286 ONTARIO	BURLINGTON	ON	L7S1E8	4166327965	3A
ACE KELLY DRYCLEANERS LTD	680 SILVERCREEK	COOKSVILLE	ON	L5A3Z1	4162765353	3A
BARTH'S CLEANING CENTRE	10456 YONGE	RICHMOND HILL	ON	L4C3C4	416 884 1411	3A
BAYLY CLEANERS	1410 BAYLY	SOUTH PICKERING	ON	L1W1L8	4168318593	3A
BETTY BRITE DRY CLEANERS	91 KING E	BOWMANVILLE	ON	L1C1N4	4166232090	3A
BRIDLEWOOD CLEANERS INC	370 MAIN N	BRAMPTON	ON	L6V1P8	4164536699	3A
BURLINGTON DRYCLEANERS INC	2290 LAKESHORE RD W	OAKVILLE	ON	L6L1H3	4168277866	3A
BURTOL CLEANERS	2-73 MILL S	PORT HOPE	ON	L1A2S8	4168855650	3A
CLEAN MACHINE	97 KING E	OSHAWA	ON	L1H1B8	416 4330356	3A
COLONIAL CLEANERS	503 NIAGARA	WELLAND	ON	L3C1L7	416 7880229	3A
DRAPE CARE	185 PLAINS E	BURLINGTON	ON	L7T2C4	416 6390022	3A
HUTONE CLEANERS	1900 LAKESHORE RD W	CLARKSON	ON	L5J1J7	416 8234077	3A
JEFFERSON CLEANERS INC	1794 LIVERPOOL	SOUTH PICKERING	ON	L1V1V9	416 8310751	3A
KENT CLEANERS	183 LANSDOWNE E	PETERBOROUGH	ON	K9J7P7	7057457909	3A
MCCLEANS CUSTOM CLEANERS	398 and 400 QUEEN W	BRAMPTON	ON	L6X1B3	4164591400	3A
STAR CLEANERS	50 MAIN W	GRIMSBY	ON	L3M1R4	4169452247	3A
WALKER'S CLEANERS	10 ROYAL ORCHARD	THORNHILL	ON	L3T3C3	4168898555	3A

BUSINESS NAME	ADDRESS	COMMUNITY	PRO	FAC	TELEPHONE	REGION
** 3B						
3 STAR CLEANERS	1714 JANE	TORONTO	ON	M9N2S4	4162499331	3B
77 DRY CLEANERS & TAILORS	698-1/2 COXWELL AV	TORONTO	ON	M4C3B9	4164651021	3B
A & A CLEANERS	2800 EGLINTON E	TORONTO	ON	M1J2C9	4162674397	3B
A & C CLEANERS	137 YONGE	TORONTO	ON	M5C1W6	4163630243	3B
A F 1 HOUR CLEANERS	2061 DANFORTH AV	TORONTO	ON	M4C1J8	4166988026	3B
A Z DRY CLEANERS & COIN LAUNDRY	651 THE QUEENSWAY	TORONTO	ON	M8Y1K6	4162521908	3B
ABLE CLEANERS	2500 EGLINTON E	TORONTO	ON	M1K2R5	4162664049	3B
ABLE CLEANERS & COIN LAUNDRY	2378 EGLINTON E	TORONTO	ON	M1K2P3	4167593036	3B
ABRA 1 (ONE) HOUR CLEANERS	871 BLOOR W	TORONTO	ON	M6G1M4	4165334338	3B
ACADEMY CLEANERS	2101 ISLINGTON	TORONTO	ON	M9P3R2	4162496472	3B
ACE-KELLY DRY CLEANERS LTD	2883 BLOOR W	TORONTO	ON	M8X1B3	4162391105	3B
ADELAIDE-YONGE CLEANERS	6 ADELAIDE E	TORONTO	ON	M5C1H6	4163688538	3B
ADELPNI CLEANERS	55 TOWN CENTRE COURT	TORONTO	ON	M1P4X4	4162969395	3B
AGINCOURT SIXTY CLEANERS	4044 SHEPPARD AV E	TORONTO	ON	M1S1S6	4162932921	3B
AIRWAY DRY CLEANERS	SKYLINE HOTEL	TORONTO	ON	M9W1J4	4162479622	3B
ALBION MALL ONE HOUR CLEANERS	ALBION MALL PLAZA	TORONTO	ON	M9V1B4	4167414333	3B
ALLAN'S CLEANERS	519 MT PLEASANT	TORONTO	ON	M4S2M4	4164826666	3B
ALMAR CLEANERS	640 ROGERS RD	TORONTO	ON	M6M1C1	4166536336	3B
ALPINE CLEANERS & LAUNDERERS	2052 QUEEN E	TORONTO	ON	M4E1E5	4166912911	3B
AMBASSADOR CLEANERS	5 HOWARD	TORONTO	ON	M4X1J4	4169211983	3B
APEX CLEANERS	3319 BATHURST	TORONTO	ON	M6A2B7	4167875801	3B
ARGOS DRY CLEANERS	531 DANFORTH AV	TORONTO	ON	M4K1P7	4164659395	3B
ARNOLD PALMER CLEANING CENTRE	6050 YONGE	TORONTO	ON	M2M3W5	4162230703	3B
ARORA CLEANERS	9 WENLOCK GATE	TORONTO	ON	M3H1P8	4167982530	3B
ASHBURY DRY CLEANERS LTD	230 MERTON	TORONTO	ON	M4S1A1	4164813060	3B
ASPEN CLEANERS	852 YONGE	TORONTO	ON	M4W2J9	4169615888	3B
AT YOUR SERVICE DRY CLEANING	1070 BLOOR W	TORONTO	ON	M6H1M6	4165884388	3B
AVCO 1 HOUR CLEANERS & LAUNDRY	3073 DUNDAS W	TORONTO	ON	M6P1Z5	4167671825	3B
AVENUE CLEANERS & TAILORS	2076 AVENUE RD	TORONTO	ON	M5M4A6	4164813546	3B
B I M CLEANERS	607 PARLIAMENT	TORONTO	ON	M4X1P9	4169613189	3B
BABAYAN'S	21 MOBILE DRIVE	SCARBOROUGH	ON	M4A1H5	4167517676	3B
BAKER CARPET CLEANING CO.	121 AVONDALE	WILLOWDALE	ON	M2N2V1	4165374131	3B
BALA DRY CLEANERS & COIN LAUNDRY	639 PHARMACY AV	TORONTO	ON	M1L3H3	4167526674	3B
BARRI-LEA CLEANERS	SLOANE & EGLINTON E	TORONTO	ON	M4A1J7	4167511560	3B
BATHURST CLEANERS & TAILORS	4138 BATHURST	TORONTO	ON	M3H3P2	4166368461	3B
BATHURST MANOR CLEANERS	BATHURST MANOR PLAZA	TORONTO	ON	M3H5K1	4166338010	3B
BATHURST VILLAGE CLEANERS LTD	5980 BATHURST	TORONTO	ON	M2R1Z1	4166679649	3B
BEAVER ONE HOUR MARTINIZING	3693 BATHURST	TORONTO	ON	M6A2E6	4167816747	3B
BEDFORD SAME DAY CLEANERS LTD	244 BLOOR W	TORONTO	ON	M5S1T8	4169689444	3B
BENDALE CLEANERS	1372 KINGSTON	TORONTO	ON	M1N1R2	4166987180	3B
BEST CLEANERS	287 COXWELL AV	TORONTO	ON	M4L3B5	4164650963	3B
BEST SERVE 1 HOUR CLEANERS	531 YONGE	TORONTO	ON	M4Y1Y5	4169219016	3B
BESTWAY CLEANERS (BAYVIEW)	1518 BAYVIEW AV	TORONTO	ON	M4G3B4	4164855489	3B
BESTWAY DONLANDS CLEANERS	249 DONLANDS	TORONTO	ON	M4J3R5	4164616381	3B
BETTER WAY DRY CLEANERS & LAUNDERERS	724 QUEEN E	TORONTO	ON	M4M1H2	4164664000	3B
BIG C CLEANERS	2660 ISLINGTON	TORONTO	ON	M9V2X5	4167414042	3B
BIRCHMOUNT CLEANERS	2175 LAWRENCE E	TORONTO	ON	M1P2P5	4167574990	3B
BLUE BONNET CLEANERS	1379 WILSON AV	TORONTO	ON	M6M1H7	4162494331	3B
BLUE JAY CLEANERS	106 HUMBERCOLLEGE	TORONTO	ON	M9V4E4	4167411143	3B
BLUE RIBBON 1 HR CLEANERS & SHIRT LAUNDERERS	1161 ST CLAIR W	TORONTO	ON	M6E1B2	4166523090	3B
BOB'S CLEANERS	645 1/2 MT PLEASANT	TORONTO	ON	M4S2M9	4164882234	3B
BONUS CLEANERS	1754 VICTORIA PARK	TORONTO	ON	M1R1R4	4167557021	3B
BOYD CLEANERS	727 DOVERCOURT	TORONTO	ON	M6H2W7	4165361490	3B
BRIDLETOWNE CLEANERS	2112 BRIDLETOWNE CIR	TORONTO	ON	M1W2L1	4164972029	3B

Dry Cleaners

BUSINESS NAME	ADDRESS	COMMUNITY	PRO	PAC	TELEPHONE	REGION
BRIDLEWOOD CLEANERS & LAUNDRY	3589 SHEPPARD E	TORONTO	ON	M1T3K8	4162911551	3B
BRIGHT LOOK CLEANERS	157 JOHN	TORONTO	ON	M5T1X3	4165951610	3B
BRIMARK CLEANERS	1029 MARKHAM RD	TORONTO	ON	M1H2Y5	4164395258	3B
BRIMLEY CLEANERS & COIN LAUNDRY	2656 EGLINTON E	TORONTO	ON	M1K2S3	4162675500	3B
BRITE STAR ONE HOUR DRY CLEANERS	193 RONCESVALLES	TORONTO	ON	M6R2L5	4165376764	3B
BROADVIEW DRY CLEANERS	936 BROADVIEW	TORONTO	ON	M4K2R1	4164669736	3B
BROTHERS & SONS CLEANERS	268 DUPONT	TORONTO	ON	M5R1V7	4169227241	3B
BROTHERS CLEANERS & LAUNDERERS	1911 ELLESMERE	TORONTO	ON	M1H2W5	4164386100	3B
BROWN'S SPEEDY CLEANERS	2391 LAKE SHORE BL W	TORONTO	ON	M8V1B7	4162590871	3B
BRYERS DRY CLEANERS	2453 KINGSTON	TORONTO	ON	M1N1V4	4162617288	3B
CABBAGETOWN DRY CLEANERS	204 CARLTON	TORONTO	ON	M5A2L1	4169252576	3B
CADET CLEANERS	290 OLD WESTON	TORONTO	ON	M6N3A4	4166565601	3B
CANADIAN DRY CLEANERS	3260 LAWRENCE AV E	TORONTO	ON	M1H1A4	4164385247	3B
CANADIANA CLEANERS	936 ST CLAIR W	TORONTO	ON	M6C1C8	4166563314	3B
CANTERBURY CLEANERS	3406 DUNDAS W	TORONTO	ON	M6S2S1	4167673690	3B
CANYON PLAZA ONE HOUR CLEANERS	548 SHEPPARD AV W	TORONTO	ON	M3H2R9	4166333033	3B
CAREFUL HAND LAUNDRY & DRY CLNRS LTD	1415 BATHURST	TORONTO	ON	M5R3H8	4165301116	3B
CARLTON CLEANERS	252-1/2 CARLTON	TORONTO	ON	M4X1F2	4169222344	3B
CARRIE'S CLEANERS	449 PHARMACY AV	TORONTO	ON	M1L3G7	4167594692	3B
CARRY CLEANERS	1331 DUNDAS W	TORONTO	ON	M6J1X8	4165312526	3B
CARTE BLANCHE CLEANERS	459 CARLAW	TORONTO	ON	M4K3H9	4164651842	3B
CASCADE CLEANERS	2926 EGLINTON E	TORONTO	ON	M1J2E4	4164311711	3B
CASH ONE HOUR CLEANING	2013 FINCH W	TORONTO	ON	M3N2V3	4167492044	3B
CENTENNIAL LAUNDROMAT & DRY CLEANING	1520 EGLINTON W	TORONTO	ON	M6E2G5	4167819515	3B
CENTRAL ONE HOUR CLEANERS	659 YONGE	TORONTO	ON	M4Y1Z9	4169212730	3B
CHEESEWORTH'S CLEANERS & WEAVERS LTD	647 MT PLEASANT	TORONTO	ON	M4S2N2	4164812251	3B
CHELSEA CLEANERS	1550 JANE	TORONTO	ON	M9N2R5	4162477973	3B
CHESTER CLEANERS LTD	1852 DANFORTH AV	TORONTO	ON	M4C1J4	4164211982	3B
CHOICE CLEANERS	2375 STEELES W	TORONTO	ON	M3J3A8	4166650727	3B
CHRISTIE BUDGET DRY CLEANERS	661 CHRISTIE	TORONTO	ON	M6G3E8	4166541821	3B
CHRISTOL DRY CLEANERS	2347 FINCH W	TORONTO	ON	M9M2W8	4167463380	3B
CITY CENTRAL ONE HOUR CLEANERS AND TAILORS	291 DUNDAS W	TORONTO	ON	M5T1G1	4165935454	3B
CLASSIC CLEANERS	12 FLEMINGTON	TORONTO	ON	M6A2N4	4167829855	3B
CLIFFORD CLEANERS & LAUNDERERS	686 THE QUEENSWAY	TORONTO	ON	M8Y1K9	4162518309	3B
COLES CLEANERS	748 SHEPPARD AV E	TORONTO	ON	M2K1C3	4162224484	3B
COLONNADE CLEANERS	131 BLOOR W	TORONTO	ON	M5S1R4	4169635948	3B
COMET CLEANERS & TAILORS	1218 DUFFERIN	TORONTO	ON	M6H4C1	4165321971	3B
COMMUNITY LAUNDRY DRY CLEANING	789 DUNDAS W	TORONTO	ON	M6J1V2	4163681929	3B
CONCORDE CLEANERS	2129 JANE	TORONTO	ON	M3M1A2	4162411998	3B
CONLINS CLEANERS	3353 ELLESMERE	TORONTO	ON	M1C1H1	4162831899	3B
CONTINENTAL CLEANERS	370 BLOOR W	TORONTO	ON	M5S1X2	4169640377	3B
COPERTINAS DRY CLEANING	520 DANFORTH RD	TORONTO	ON	M1K1C6	4167612740	3B
CORBY'S CLEANERS	421 MARKHAM RD	TORONTO	ON	M1J3E2	4164316968	3B
CORDIAL CLEANERS	1871 LAWRENCE AV E	TORONTO	ON	M1R2Y3	4167517356	3B
CORKY CLEANERS	3294 KEELE	TORONTO	ON	M3M2H7	4166300503	3B
CORVETTE DRY CLEANING	613 KENNEDY	TORONTO	ON	M1K2B2	4162662711	3B
COURT CLEANERS AND SHIRT LAUNDERERS	COMMERCE COURT WEST	TORONTO	ON	M5L1O2	4168681799	3B
COURTESY CLEANERS	2780 VICTORIA PARK	TORONTO	ON	M2J4A8	4164915106	3B
COWAN DRY CLEANERS & LAUNDERING	141 COWAN	TORONTO	ON	M6K2N1	4165327951	3B
CREEDS FUR STORAGE & DRY CLEANING	295 DAVENPORT	TORONTO	ON	M4W1B7	4169232500	3B
CRESCENT TOWN CLEANERS	3008 DANFORTH AV	TORONTO	ON	M4C1M7	4166905218	3B
CREST CLEANERS	649 MCCOWAN	TORONTO	ON	M1J1K2	4164314606	3B
CROW CLEANERS	1030 PAPE	TORONTO	ON	M4K3W2	4164233871	3B
CROW CLEANERS	20 CARLTON	TORONTO	ON	M5G2A5	4165951148	3B

Dry Cleaners

BUSINESS NAME	ADDRESS	COMMUNITY	PRO	PAC	TELEPHONE	REGION
CROW CLEANERS LTD	142 AVENUE RD	TORONTO	ON	M5R2H6	4169641375	3R
CROWN CLEANERS	3761 LAKESHORE RD W	TORONTO	ON	M8W1R1	4162559545	3R
CRYSTAL TWO HOUR CLEANERS	627 ST CLAIR W	TORONTO	ON	M6C1A7	4166531176	3R
DAISY CLEANER	4200-A DUNDAS W	TORONTO	ON	M8X1Y6	4162395476	3R
DALE CLEANERS	140 HOVE	TORONTO	ON	M3H4Z7	4166335135	3R
DANDY CLEANERS	2560 GERRARD E	TORONTO	ON	M1N1W8	4166949950	3R
DAVENPORT DRY CLEANERS	369 DAVENPORT ROAD	TORONTO	ON	M5R1R5	4169614953	3R
DAY STAR CLEANERS	3321 DUNDAS W	TORONTO	ON	M6P2A6	4167673243	3R
DAY-N-NITE CLEANERS	2495 EGLINTON E	TORONTO	ON	M1K2R1	4167642475	3R
DAY-N-NITE CLEANERS MIMICO	2491 LAKE SHORE BL W	TORONTO	ON	M8V1C5	4162515855	3R
DEL MONTE CUSTOM CLEANERS	1124 THE QUEENSWAY	TORONTO	ON	M8Z1P7	4162595511	3R
DEL-RAY CLEANERS	586 PARLIAMENT	TORONTO	ON	M4X1P8	4169257393	3R
DIAMENT'S CLEANERS	78 TEIGNMOUTH	TORONTO	ON	M6E1S9	4166511581	3R
DIXIELAND CLEANERS	1801 LAWRENCE AV E	TORONTO	ON	M1R2X9	4167593969	3R
DOLPHIN CLEANERS	462 BIRCHMOUNT	TORONTO	ON	M1K1N8	4166944671	3R
DON'S CLEANERS	3236 EGLINTON E	TORONTO	ON	M1J2H6	4162670707	3R
DON'S DRY CLEANING SERVICE	1047 AVENUE RD	TORONTO	ON	M5N2C5	4164852390	3R
DORSET PARK CLEANERS	1515 BIRCHMOUNT	TORONTO	ON	M1P2G7	4167577413	3R
DOWNSVIEW CLEANERS	4 BROOKHAVEN DR	TORONTO	ON	M6M4N7	4162475110	3R
DOWNSVIEW DRY CLEANERS	846 WILSON AV	TORONTO	ON	M3K1E5	4166358202	3R
DRESS-WELL CLEANERS	99 CARLTON	TORONTO	ON	M5B1M1	4169774634	3R
DUFFERIN CLEANERS LTD	2318 BLOOR W	TORONTO	ON	M6S1P2	4167661007	3R
DUFFERIN MALL CLEANERS	900 DUFFERIN	TORONTO	ON	M6H4A9	4165342400	3R
DUNDAS DRY CLEANERS & TAILORING	1451 DUNDAS W	TORONTO	ON	M6J1Y7	4165883685	3R
DUTCH GIRL CLEANERS	80 ELLESMERE	TORONTO	ON	M1R4C2	4164442415	3R
EAST LYNN CLEANERS	1904 DANFORTH AV	TORONTO	ON	M4C1J6	4164259450	3R
EASTDALE CLEANERS	1 EASTDALE	TORONTO	ON	M4C4Z8	4166904111	3R
ECONOMY CLEANING CENTRE	4630 KINGSTON RD	TORONTO	ON	M1E4Z4	4162849883	3R
ECONOMY DRESSMAKING ALTERATIONS & DRY CLEANING	2841 DUNDAS W	TORONTO	ON	M6P1Y6	4167661453	3R
ELDON CLEANERS	775-D VAUGHAN	TORONTO	ON	M6E2Z5	4167839983	3R
ELEGANCE CLEANERS	3805 BLOOR W	TORONTO	ON	M9B1L3	4162322349	3R
ELEGANT CLEANERS	787 DUPONT	TORONTO	ON	M6G1Z5	4165348023	3R
ELLA'S CLEANERS	2999 BATHURST	TORONTO	ON	M6B3B3	4167835559	3R
EMBASSY CLEANERS	927-B ST CLAIR W	TORONTO	ON	M6C1C7	4166544159	3R
ERINGATE DRY CLEANERS	120 ERINGATE DR	TORONTO	ON	M9C3Z8	4166213426	3R
ETOBICOKE DRY CLEANERS & LAUNDERERS LTD	350 BROWN'S LINE	TORONTO	ON	M8W3T7	4162515239	3R
EVERBEST CLEANERS	3601 LAWRENCE AV E	TORONTO	ON	M1G1P5	4164391843	3R
EXECUTIVE CLEANERS	790 BAY	TORONTO	ON	M5G1N8	4165918630	3R
FAIR CLEANERS	779 DANFORTH RD	TORONTO	ON	M1K1G9	4162662492	3R
FAIRWAY 1 HR CLEANERS & SHIRT LAUNDERERS	3480 KEELE	TORONTO	ON	M3J1M2	4166333444	3R
FAIRWAY CLEANERS	510 OAKWOOD	TORONTO	ON	M6E2X1	4166549537	3R
FALLINGBROOK CLEANERS	1218 KINGSTON RD	TORONTO	ON	M1N1P3	4166903256	3R
FAMOUS CLEANERS	5588 YONGE	TORONTO	ON	M2N5S2	4162251071	3R
FANCY WAY CLEANERS	2200 DANFORTH AV	TORONTO	ON	M4C1K3	4164212347	3R
FELICE DRY CLEANERS	254 MARLEE	TORONTO	ON	M6B2H7	4167892889	3R
FIFTH AVENUE CLEANERS	790 BROADVIEW	TORONTO	ON	M4K2P7	4164656879	3R
FINCH CLEANERS & LAUNDERERS LTD	4921 BATHURST	TORONTO	ON	M2R1X8	4162258952	3R
FINCH WEST CLEANERS	3453 WESTON	TORONTO	ON	M9M2V9	4167457128	3R
FINCHDALE CLEANERS	2556 FINCH W	TORONTO	ON	M9M2G3	4167497240	3R
FINE CLEANERS	36 WILLOWRIDGE	TORONTO	ON	M9R4B4	4162473941	3R
FRAY'S CLEANERS	KENNEDY & ELLESMERE	TORONTO	ON	M1P2L5	4162917821	3R
FRED'S CLEANERS	1919 GERRARD E	TORONTO	ON	M4L2C2	4166901077	3R
FRESH-UP 1 HOUR DRY CLEANERS	3024 BLOOR W	TORONTO	ON	M8X1C4	4162313011	3R
FRESH-UP CLEANERS	2940 DUNDAS W	TORONTO	ON	M6P1Y8	4167669128	3R

Dry Cleaners

BUSINESS NAME	ADDRESS	COMMUNITY	PRO	PAC	TELEPHONE	REGION
G O CLEANERS	55 UNIVERSITY	TORONTO	ON	M5J2H7	4168693047	3B
GALLERIA CLEANERS	1245 DUFONT	TORONTO	ON	M6H2A6	4165339930	3B
GENTLE BEAU DRY CLEANERS	26 ERSKINE	TORONTO	ON	M4P1Y2	4164873960	3B
GENTLE KLEEN DRY CLEANERS	3470 DANFORTH AV	TORONTO	ON	M1L1E1	4166943481	3B
GENTLETOUCH DRY CLEANING	2931 ST CLAIR E	TORONTO	ON	M4B1N9	4167518841	3B
GIBSON'S THE THOUGHTFUL DRY CLEANER	4241 DUNDAS W	TORONTO	ON	M8X1Y5	4162392301	3B
GLEN PARK CLEANERS	2892 DUFFERIN	TORONTO	ON	M6B3S6	4167879033	3B
GLENDOWER 1 HR CLEANERS	333 GLENDOWER CIRCUIT	TORONTO	ON	M1T2Z7	4162935337	3B
GLENFOREST CLEANERS LTD	3309 YONGE	TORONTO	ON	M4N2L9	4164886717	3B
GLENLAKE CLEANERS	2473 DUNDAS W	TORONTO	ON	M6P1X3	4165337776	3B
GLOMAR DRY CLEANERS	2250 BIRCHMOUNT	TORONTO	ON	M1T2M2	4162983764	3B
GO-GO CLEANERS	UNION STATION	TORONTO	ON	M5J1E6	4163637612	3B
GOLDEN KEY CLEANERS	4218 LAWRENCE AV E	TORONTO	ON	M1E4X9	4162829911	3B
GOLDEN MILE CLEANERS	2383 EGLINTON E	TORONTO	ON	M1K2M5	4167550421	3B
GOLDEN PARK DRY CLEANERS	3733 LAWRENCE AV E	TORONTO	ON	M1G1P7	4164399797	3B
GOLDEN TOUCH DRY CLEANERS	1601 BIRCHMOUNT	TORONTO	ON	M1P2H5	4162916986	3B
GOODWILL ONE HOUR CLEANERS	1730 ST CLAIR W	TORONTO	ON	M6N1J1	4166561730	3B
GRANTS CLEANERS	986 O'CONNOR DR	TORONTO	ON	M4J3S2	4167553839	3B
GREENFIELD CLEANERS	2211 DUNDAS W	TORONTO	ON	M6R1X6	4165335436	3B
GREENWIN SQUARE CLEANERS	345 BLOOR E	TORONTO	ON	M4W3S6	4169615588	3B
GROOM CLEANERS	498 RUNNYMEDE RD	TORONTO	ON	M6S2Z5	4167673207	3B
GUARANTEE CLEANERS	129-B SHERBOURNE	TORONTO	ON	M5A2R5	4163646585	3B
GUARANTY CLEANERS	234 EGLINTON E	TORONTO	ON	M4P1K5	4164817981	3B
GUILDWOOD CLEANERS & TAILORS	111 GUILDWOOD PKWY	TORONTO	ON	M1E1P1	4162671873	3B
HAIRE BROS CLEANERS	98 MARBLE	TORONTO	ON	M6E3B5	4167871553	3B
HALTON CLEANERS & LAUNDERERS	20 RIPLEY	TORONTO	ON	M6S3N9	4167662612	3B
HANDY ANDY'S DRY CLEANERS	811 GERRARD E	TORONTO	ON	M4M1Y8	4164653911	3B
HANDY CLEANERS	707 KENNEDY	TORONTO	ON	M1K2C1	4162661388	3B
HARBOUR STAR CLEANERS	1 YONGE	TORONTO	ON	M5E1E5	4163611158	3B
HARRIS CLEANERS & TAILORS	156 SYMINGTON	TORONTO	ON	M6P3W4	4165355698	3B
HARVEY'S CLEANERS	3001 SHEPPARD AV E	TORONTO	ON	M1T3J5	4164912511	3B
HIGH PARK CLEANERS & PRESSERS	107 RONCESVALLES	TORONTO	ON	M6R2K9	4165325365	3B
HIGHLANDER LAUNDRY-DRY CLEANING	5809 YONGE	TORONTO	ON	M2M3T9	4162250039	3B
HILLSDALE CLEANERS	2180 YONGE	TORONTO	ON	M4S2B9	4164810300	3B
HOBSON CLEANERS	1212 QUEEN E	TORONTO	ON	M4M1L7	4164616056	3B
HOLLYWOOD CLEANERS	1521 YONGE	TORONTO	ON	M4T1Z2	4169244944	3B
HOSTESS DRY CLEANERS LTD	3435 BATHURST	TORONTO	ON	M6A2C3	4167837501	3B
HOWARD SHOE SERVICE & DRY CLEANING	17 HOWARD	TORONTO	ON	M4X1J4	4169259145	3B
HUMBER SUMMIT CLEANERS & LAUNDERERS	2965 ISLINGTON	TORONTO	ON	M9L2K8	4167494662	3B
HUNTINGWOOD DRY CLEANERS	2592 BIRCHMOUNT	TORONTO	ON	M1T2M5	4162934913	3B
HUTONE CLEANERS	10 TEESDALE PL	TORONTO	ON	M1L1K9	4166983053	3B
HYWAY DRIVE-IN CLEANERS	4340 KINGSTON	TORONTO	ON	M1E2M8	4162821461	3B
IMPERIAL ONE HOUR DRY CLEANERS LTD	675 LANSDOWNE	TORONTO	ON	M6H3Y9	4165348151	3B
IN-SUK CHO CLEANERS & LAUNDERERS	741 OSSINGTON	TORONTO	ON	M6G3T8	4165369545	3B
INES DRY CLEANERS	374 HARBORD	TORONTO	ON	M6G1H9	4165322935	3B
J & J CLEANERS	5740 YONGE	TORONTO	ON	M2M3T4	4162242112	3B
J D'S DRY CLEANERS	2120-A QUEEN E	TORONTO	ON	M4E1E2	4166943580	3B
JAMALL CLEANERS & CARIBBEAN TAILORS	353 PITFIELD	TORONTO	ON	M1S3E5	4162980777	3B
JAMESON DRY CLEANER	1445-A QUEEN W	TORONTO	ON	M6R1A1	4165351390	3B
JANE PARK PLAZA CLEANERS & ALTERATIONS	863 JANE	TORONTO	ON	M6N4C4	4167631633	3B
JASON'S CLEANERS	1677 AVENUE RD	TORONTO	ON	M5M3Y3	4167831070	3B
JERRY'S CLEANING & ALTERATIONS	3067 DUNDAS W	TORONTO	ON	M6P1Z5	4167671072	3B
JIM'S 2 HOUR CLEANERS	991 KINGSTON RD	TORONTO	ON	M1M1N4	4166919064	3B
JOSF AND TERESA FERNANDES CLEANING	672 COLLEGE	TORONTO	ON	M6G1B8	4165341983	3B
K'S DRY CLEANERS	118 DAWES	TORONTO	ON	M4C5B6	4166909736	3B

BUSINESS NAME	ADDRESS	COMMUNITY	PRO	PAC	TELEPHONE	REGION
KAYS CLEANERS	330-1/2 PARLIAMENT	TORONTO	ON	M5A2Z2	4169682348	3R
KEMBASS CLEANERS	1025 BLOOR W	TORONTO	ON	M6H1M1	4165336400	3R
KEN'S CLEANERS & DYERS	3 LINSMORE CR	TORONTO	ON	M4J4J5	4164619741	3R
KENDALE CLEANERS	2067 LAWRENCE W	TORONTO	ON	M9N1H2	4162476451	3R
KEW BEACH CLEANERS	2020 QUEEN E	TORONTO	ON	M4L1J4	4166993022	3R
KIM'S CLEANERS	971 O'CONNOR DR	TORONTO	ON	M4B2T1	4167556466	3R
KING CLEANERS & TAILORS	1282 YONGE	TORONTO	ON	M4T1W5	4169226300	3R
KING'S CLEANING CENTRE	1864 DANFORTH AV	TORONTO	ON	M4C1J6	4164214886	3R
KINGSTON ONE HOUR CLEANERS	1458 KINGSTON RD	TORONTO	ON	M1N1R6	4166901233	3R
KINGSTON ROAD DRY CLEANERS	668 KINGSTON RD	TORONTO	ON	M4E1R4	4166902979	3R
KINGSWAY LAUNDRY & CLEANERS	2969 BLOOR W	TORONTO	ON	M8X1B8	4162317241	3R
KNOB HILL CLEANERS & LAUNDRY BLOOR LTD	463 BLOOR W	TORONTO	ON	M5S1X9	4169236541	3R
KNOB HILL CLEANERS & LAUNDRY LTD	2699 EGLINTON E	TORONTO	ON	M1K2S2	4162614991	3R
L TRIOLO CLEANERS ONE HOUR SERVICE	852 SHEPPARD AV W	TORONTO	ON	M3H2T5	4166387892	3R
LAKESIDE SERVICE CLEANERS	3045 LAKE SHORE BL W	TORONTO	ON	M8V1K5	4162592671	3R
LAKEVIEW CLEANERS & LAUNDRY	1183 DUNDAS W	TORONTO	ON	M6J1X3	4165349941	3R
LAMBTON CLEANERS	253 SCARLETT	TORONTO	ON	M6N4K9	4167631946	3R
LAN-RAY CLEANERS	1224 GLENCAIRN	TORONTO	ON	M6B2B5	4167836193	3R
LAROSE CLEANERS	140 LA ROSE	TORONTO	ON	M9P1B2	4162488016	3R
LIANA'S CLEANERS	327 DANFORTH AV	TORONTO	ON	M4K1N7	4164611821	3R
LINDSAY'S CLEANERS & TAILORS	163 LAUDER	TORONTO	ON	M6E3H3	4166516975	3R
LONDON CLEANERS	3035 KINGSTON RD	TORONTO	ON	M1M1P1	4162611727	3R
LONG BRANCH CLEANING & TAILORING	3272 LAKE SHORE BL W	TORONTO	ON	M8V1M4	4162599355	3R
LOU'S CLEANERS	348 SAMMON	TORONTO	ON	M4J2A5	4164630968	3R
LOYAL CUSTOM CLEANERS LTD	1304 WESTON	TORONTO	ON	M6M4R5	4162493000	3R
LUCKY STAR CLEANERS & LAUNDERERS	1700 WILSON AV	TORONTO	ON	M3L1B2	4162475744	3R
MADAME'S DRY CLEANERS AND LAUNDRY INC	55 EMMETT	TORONTO	ON	M6M2E4	4162473748	3R
MADISON CLEANERS	1818 JANE	TORONTO	ON	M9N2T3	4162444455	3R
MAJESTIC CLEANERS	2787 ST CLAIR E	TORONTO	ON	M4B1N1	4167599582	3R
MARK 1 CLEANERS LTD	2208-C QUEEN E	TORONTO	ON	M4E1E7	4166913322	3R
MARTIN'S CLEANERS & DYERS LTD	1072 ISLINGTON	TORONTO	ON	M8Z4R6	4162313327	3R
MARTINIZING DRY CLEANERS	225 MCRAE DR	TORONTO	ON	M4G1T6	4164212508	3R
MARTINIZING DRY CLEANING AND SHOE REPAIR	WARDEN WOODS MALL	TORONTO	ON	M1L4R7	4167596255	3R
MARVEL CLEANERS	3850 FINCH E	TORONTO	ON	M9M2G4	4167926953	3R
MARVELO CLEANERS	1692 DUFFERIN	TORONTO	ON	M6E3P1	4166521930	3R
MASCOT CLEANER & CUSTOM TAILORS	259 COXWELL AV	TORONTO	ON	M4L3B5	4164630890	3R
MASTER CLEANER	197 SHEPPARD AV E	TORONTO	ON	M2N3A8	4162231858	3R
MCCAUL ST CLEANERS & TAILORS LTD	132 MCCAUL	TORONTO	ON	M5T1W2	4169774040	3R
MEATON'S CLEANERS	323 BURNHAMTHORPE RD	TORONTO	ON	M9B2A2	4162314748	3R
MELODY CLEANERS LTD	15 SIX POINT PLAZA	TORONTO	ON	M9B1B1	4162315559	3R
MERCURY CLEANERS	1030 QUEEN E	TORONTO	ON	M4M1K4	4164668513	3R
METRO ONE HOUR DRY CLEANERS AND SHIRT LAUNDERERS	1349 DANFORTH RD	TORONTO	ON	M1J1G7	4162669891	3R
METROCLEAN LTD	3449 WESTON	TORONTO	ON	M9M2V9	4167450066	3R
MIDLAND CLEANERS	2480 EGLINTON E	TORONTO	ON	M1K2R4	4162616385	3R
MIDTOWN CLEANERS	683 BLOOR W	TORONTO	ON	M6G1L3	4165356759	3R
MIMICO CLEANERS & MEN'S WEAR	386 ROYAL YORK	TORONTO	ON	M8Y2R3	4162591234	3R
MINI MAGIC DRY CLEANING CENTRE	4379 KINGSTON	TORONTO	ON	M1E2M9	4162826646	3R
MINI-MAGIC DRY CLEANERS	2335 BRIMLEY	TORONTO	ON	M1S3L6	4162911039	3R
MIRACLE CLEANING CENTRE	745 COLLEGE	TORONTO	ON	M6G1C5	4165301023	3R
MIRACLE DRY CLEANERS	653 VICTORIA PARK	TORONTO	ON	M1L1B1	4166904726	3R
MISS DRY CLEANERS & LAUNDRY	1942 DAVENPORT	TORONTO	ON	M6N1C2	4166562906	3R
MODERN CLEANERS & LAUNDERERS LTD	416 OAKWOOD	TORONTO	ON	M6E2W3	4166542013	3R
MONARCH DRY CLEANERS	535 BLOOR W	TORONTO	ON	M5S1Y5	4165325976	3R
MOORE PARK CLEANERS	1395 YONGE	TORONTO	ON	M4T1Y4	4169217320	3R

Dry Cleaners

BUSINESS NAME	ADDRESS	COMMUNITY	PRO	PAC	TELEPHONE	REGION
MORELL CUSTOM CLEANERS	1879 DAVENPORT	TORONTO	ON	M6N1B9	4166567898	3B
MORRISON CLEANERS	122A MORRISON AV	TORONTO	ON	M6E1M4	4166517299	3B
MR GEORGE ONE HOUR CLEANERS	1218 KING W	TORONTO	ON	M6K1G4	4165321032	3B
MR LEE'S DRY CLEANING	705 KING W	TORONTO	ON	M5V2W8	4163657696	3B
N & B CLEANERS	1100 ISLINGTON	TORONTO	ON	M8Z4S2	41623319R6	3B
N B CLEANERS	416 PARLIAMENT	TORONTO	ON	M5A3A2	4169229103	3B
NEIGHBOURHOOD CLEANERS	260 DUPONT	TORONTO	ON	M5R1V7	4169220532	3B
NEW BONANZA CLEANERS & LAUNDERERS	1706 AVENUE RD	TORONTO	ON	M5M3Y6	4167812522	3B
NEW CENTURY CLEANERS & LAUNDERERS	2412 KINGSTON RD	TORONTO	ON	M1N1V2	4162672635	3B
NEW COLLEGE CLEANERS	353 COLLEGE	TORONTO	ON	M5T1S5	4169232931	3B
NEW FAMILY CLEANERS & SHIRT LAUNDERERS LTD	666 BURNHAMTHORPE RD	TORONTO	ON	M9C2Z4	4166212870	3B
NEW PENTHOUSE CLEANERS	875 EGLINTON W	TORONTO	ON	M5N1E7	4167839242	3B
NEW STAR CLEANERS	2343 DUNDAS W	TORONTO	ON	M6P1W7	4165346355	3B
NEW SUSAN ONE-HOUR CLEANERS	3863 LAWRENCE AV E	TORONTO	ON	M1G1R2	4164311800	3B
NEW WAY CLEANERS & LAUNDERERS	1100 YONGE	TORONTO	ON	M4W2L6	4169231307	3B
NONSUCH LAUNDRY & CLEANERS	2281 BLOOR W	TORONTO	ON	M6S1P1	4167666211	3B
NORM'S CLEANERS	849 COLLEGE	TORONTO	ON	M6H1A1	4165366213	3B
NORTH PARK CLEANERS	426 WILSON	TORONTO	ON	M3H1S9	4166356361	3B
NORTHMORE CLEANERS	246 CARLTON	TORONTO	ON	M5A2L1	4169237506	3B
NORTON CLEANERS	3445 ST CLAIR E	TORONTO	ON	M1L1W6	4162614220	3B
NU-BRITE CLEANERS	2362 EGLINTON W	TORONTO	ON	M6M1S6	4166517781	3B
NYMARK CLEANERS	4789 LESLIE	TORONTO	ON	M2J2K8	4164931454	3B
O'MISTER CLEANERS	274 DUNDAS E	TORONTO	ON	M5A1Z9	4169215903	3B
OAKDALE CLEANERS	330 DIXON RD	TORONTO	ON	M9R1S9	4162479306	3B
OK CLEANERS	1640 QUEEN W	TORONTO	ON	M6R1A9	4165884403	3B
OLYMPIC DRY CLEANERS	955 PAPE	TORONTO	ON	M4K3V6	4164234479	3B
ONE HOUR EGLINTON CLEANERS & SHIRT LAUNDERERS	170 EGLINTON E	TORONTO	ON	M4P1G4	4164846921	3B
ONE HOUR MARTINIZING DRY CLEANERS & SHIRT LAUNDERERS	3414 YONGE	TORONTO	ON	M4N2M9	4164888950	3B
ONE HOUR MARTINIZING DRY CLEANERS & SHIRT LAUNDERERS	337 BLOOR W	TORONTO	ON	M5S1W7	4169770207	3B
ONE HOUR MARTINIZING DRY CLEANERS & SHIRT LAUNDERERS	640 FINCH E	TORONTO	ON	M2K2E6	4162235738	3B
ONE HOUR MARTINIZING DRY CLEANERS & SHIRT LAUNDERERS	2298 KEELE	TORONTO	ON	M6M3Z8	4162470057	3B
ONE HOUR MARTINIZING DRY CLEANERS & SHIRT LAUNDERERS	2385 LAKE SHORE BL W	TORONTO	ON	M8V1B7	4162514373	3B
ONE HOUR MARTINIZING DRY CLEANERS & SHIRT LAUNDERERS	790 EGLINTON E	TORONTO	ON	M4G2L1	4164259474	3B
ONE HOUR MARTINIZING DRY CLEANERS & SHIRT LAUNDERERS	744 MARKHAM RD	TORONTO	ON	M1H2A9	4164381451	3B
ONE HOUR MARTINIZING DRY CLEANERS & SHIRT LAUNDERERS	385 SPADINA RD	TORONTO	ON	M5P2W1	4164836731	3B
ONE HOUR MARTINIZING DRY CLEANERS & SHIRT LAUNDERERS	2455 YONGE	TORONTO	ON	M4P2H6	4164850900	3B
ONE HOUR MARTINIZING DRY CLEANERS & SHIRT LAUNDERERS	3210 YONGE	TORONTO	ON	M4N2L2	4164895557	3B
ONE HOUR MARTINIZING DRY CLEANERS & SHIRT LAUNDERERS	2290 DUNDAS W	TORONTO	ON	M6R1X4	4165375161	3B
ONE HOUR MARTINIZING DRY CLEANERS & SHIRT LAUNDERERS	2141 KIPLING	TORONTO	ON	M9W4K8	4167433781	3B
ONE HOUR MARTINIZING DRY CLEANERS & SHIRT LAUNDERERS	755 JANE	TORONTO	ON	M6N4B3	4167679371	3B
ONE HOUR MARTINIZING DRY CLEANERS & SHIRT LAUNDERERS	2619 ISLINGTON	TORONTO	ON	M9V2X4	4167423912	3B

BUSINESS NAME	ADDRESS	COMMUNITY	PRO	PAC	TELEPHONE	REGION
ONE HOUR WELCLEAN	72 WELLESLEY E	TORONTO	ON	M4Y1H2	4169221657	3R
ORBIT FAMILY CLEANERS	734 BROWN'S LINE	TORONTO	ON	M8W3W1	4162555238	3R
ORIOLE PLAZA CLEANERS	1065 MIDLAND	TORONTO	ON	M1K4G7	4167554321	3R
OSCAR CLEANERS	100 CONSILIUM PL	TORONTO	ON	M1H3E3	4162969863	3R
PACKHAM CLEANERS	1108 EGLINTON W	TORONTO	ON	M6C2E2	4167821011	3R
PAINTED POST CLEANERS	801 MARKHAM RD	TORONTO	ON	M1H2Y1	4164390761	3R
PALMERSTON DUNDAS DRY CLEANERS	157 1/2 PALMERSTON	TORONTO	ON	M6J2J3	4163659883	3R
PAMPER CLEANERS	145 KING W	TORONTO	ON	M5H1J8	4168681940	3R
PARADISE CLEANERS	1408 QUEEN W	TORONTO	ON	M6K1L9	4165336313	3R
PARAMOUNT CLEANERS	586 EGLINTON E	TORONTO	ON	M4P1P2	4164831690	3R
PARK MOUNT CLEANERS	562 MT PLEASANT	TORONTO	ON	M4S2M6	4164884919	3R
PARKAY CLEANERS	1218 EGLINTON W	TORONTO	ON	M6C2E3	4167812663	3R
PARKERS CLEANERS	55 HARVEST MOON DR	UNIONVILLE	ON	M9W5M1	4164752053	3R
PARKERS CLEANERS LTD	BAYVIEW & CUMMER	TORONTO	ON	M2K1G4	4162217222	3R
PARKERS CLEANERS LTD	BAYVIEW & SHEPPARD	TORONTO	ON	M2K1E6	4162226090	3R
PARKERS CLEANERS LTD	DUNDAS & HWY 427	TORONTO	ON	M9B3Y8	4162317839	3R
PARKERS CLEANERS LTD	5438 DUNDAS W	TORONTO	ON	M9B1B5	4162339967	3R
PARKERS CLEANERS LTD	THORNCREST PLAZA	TORONTO	ON	M9A3L8	4162398628	3R
PARKERS CLEANERS LTD	DIXON & KIPLING	TORONTO	ON	M9R2Y7	4162447717	3R
PARKERS CLEANERS LTD	EGLINTON & KIPLING	TORONTO	ON	M9R2R4	4162481126	3R
PARKERS CLEANERS LTD	951 MARTIN GROVE	TORONTO	ON	M9W5M1	4162485511	3R
PARKERS CLEANERS LTD	LAWRENCE & KEELE	TORONTO	ON	M6L1A5	4162496731	3R
PARKERS CLEANERS LTD	2780 LAKESHORE BL W	TORONTO	ON	M8V1H5	4162556370	3R
PARKERS CLEANERS LTD	APPLEWOOD HILLS PLAZA	COOKSVILLE	ON	K9W5M1	4162792151	3R
PARKERS CLEANERS LTD	THORNCLIFFE PK & OVERLEA	TORONTO.	ON	M9H1H3	4164215642	3R
PARKERS CLEANERS LTD	1744 ELLESMERE	TORONTO	ON	M1H2V5	4164315174	3R
PARKERS CLEANERS LTD	1881 LESLIE	TORONTO	ON	M3B2M3	4164443592	3R
PARKERS CLEANERS LTD	BAYVIEW & YORK MILLS	TORONTO	ON	M2L1A9	4164443661	3R
PARKERS CLEANERS LTD	PARKWOODS VILLAGE	TORONTO	ON	M3A1Z5	4164474661	3R
PARKERS CLEANERS LTD	3125 YONGE	TORONTO	ON	M4N2K6	4164884404	3R
PARKERS CLEANERS LTD	422 SPADINA RD	TORONTO	ON	M5T2G7	4164885603	3R
PARKERS CLEANERS LTD	105 PARKWAY FOREST	TORONTO	ON	M2J1L8	4164913678	3R
PARKVIEW CLEANERS	1984 BLOOR W	TORONTO	ON	M6P3K9	4167679513	3R
PARKWAY CLEANERS	124 ELLESMERE	TORONTO	ON	M1R4C4	4164470197	3R
PARLIAMENT CLEANERS	436 PARLIAMENT	TORONTO	ON	M5A3A2	4169235276	3R
PARTNER CLEANERS	960-A BRIMORTON DR	TORONTO	ON	M1G2V2	4164385801	3R
PEARL BRITE CLEANERS	1395 QUEEN W	TORONTO	ON	M6K1M3	4165362989	3R
PEAT'S CLEANERS & TAILORS LTD	4672 YONGE	TORONTO	ON	M2N5M2	4167211104	3R
PENTHOUSE DRY CLEANERS & LAUNDERERS	794 BROADVIEW	TORONTO	ON	M4K2P7	4164630576	3R
PEOPLE'S CLEANERS	1158 WARDEN	TORONTO	ON	M1R2R1	4167554444	3R
PERFECT CLEANERS	25 SLAN	TORONTO	ON	M1G3B1	4164397713	3R
PERK CLEANERS	2190 WARDEN	TORONTO	ON	M1T1V6	4164946786	3R
PERLUX CLEANERS	462 KINGSTON	TORONTO	ON	M4L1V3	4166993953	3R
PETER'S DRY CLEANER & ALTERATIONS	503-B PARLIAMENT	TORONTO	ON	M4X1P3	4169681665	3R
PLATIS & SONS 1 HR CLEANERS	2152 YONGE	TORONTO	ON	M4S2A8	4164896393	3R
PLAXTON CLEANERS	2869 ST CLAIR E	TORONTO	ON	M4B1N4	4167591258	3R
PLAZA CLEANERS	700 UNIVERSITY	TORONTO	ON	M5G1Z5	4165970771	3R
PRACTICAL DRY CLEANING LAUNDRY & TAILORING	824 SHEPPARD W	TORONTO	ON	M3H2T2	4166332035	3R
PREMIER CLEANERS	33 YONGE	TORONTO	ON	M5E1G4	4163620861	3R
PRESTIGE CLEANERS	9 CLINTWOOD GATE	TORONTO	ON	M3A1M3	4164476281	3R
PRIME CLEANERS	60 BLOOR W	TORONTO	ON	M4W3B8	4169643354	3R
PRINCESS CLEANERS	1666 VICTORIA PARK	TORONTO	ON	M1R1P7	4167599241	3R
PRO CLEANERS & TAILORS	807 BRIMLEY	TORONTO	ON	M1J1C9	4162611744	3R

Dry Cleaners

BUSINESS NAME	ADDRESS	COMMUNITY	PRO	PAC	TELEPHONE	REGION
PROFESSIONAL 1 HR CLEANERS	1116 VICTORIA PARK	TORONTO	ON	M4B2K3	4167596629	3B
PROMENADE CLEANERS AND SHIRT LAUNDERERS	2581 DANFORTH AV	TORONTO	ON	M4C1L4	4166916828	3B
PURE CLEANERS	544 EGLINTON W	TORONTO	ON	M5N1B4	4164838985	3B
PYRAMOS CLEANERS	156 THE ESPLANADE	TORONTO	ON	M5A3T2	4163660655	3B
QUALITY CLEANERS	325 RONCESVALLES	TORONTO	ON	M6R2M6	4165369364	3B
QUALITY CLEANERS 79	389 JANE	TORONTO	ON	M6S3Z3	4167629386	3B
QUEEN CITY CLEANERS	320 QUEEN E	TORONTO	ON	M5A1S8	4163641630	3B
QUEEN LAUNDRY & DRY CLEANERS	1351 QUEEN W	TORONTO	ON	M6K1M1	4165338903	3B
QUICK CLEANERS-LAUNDERS LTD	1938 EGLINTON W	TORONTO	ON	M6E2J8	4167834361	3B
R S CLEANING SERVICES	200 WELLESLEY E	TORONTO	ON	M4X1G3	4169277625	3B
RAPID CLEANERS & SHIRT LAUNDERERS	1839 AVENUE RD	TORONTO	ON	M5M3Z4	4167833000	3B
REGENCY CLEANERS	827 BROWN'S LINE	TORONTO	ON	M8W3V7	4162511664	3B
RENEW CLEANERS	3647 LAKE SHORE BL W	TORONTO	ON	M8W1P6	4162598741	3B
RENFORTH MALL ONE HOUR CLEANERS LTD	460 RENFORTH	TORONTO	ON	M9C2N2	4166220681	3B
REUTER CLEANERS LIMITED	3881 DON MILLS RD	TORONTO	ON	M2H4S7	4164931517	3B
REX DRY CLEANERS	58 LANSDOWNE	TORONTO	ON	M6K2V9	4165315664	3B
RITZ CLEANERS	2 DUNDONALD	TORONTO	ON	M4Y1K2	4169279583	3B
RIVERVIEW CLEANERS	5 RIVERVIEW GDNS	TORONTO	ON	M6S4E4	4167625099	3B
ROBERTSON QUALITY CLEANERS	2416 QUEEN E	TORONTO	ON	M1N1A2	4166944545	3B
ROSEDALE 1 HOUR CLEANERS	418 SUMMERHILL AV	TORONTO	ON	M4W2E4	4169229847	3B
ROSEWOOD DRYCLEANERS & LAUNDERERS	133 MONTEZUMA TRL	TORONTO	ON	M1V1K4	4162939805	3B
ROUGE HILL CLEANERS & LAUNDERERS	WEST ROUGE PLAZA	TORONTO	ON	M1E3E1	4162824671	3B
ROYAL CLEANERS	1123 BROADVIEW	TORONTO	ON	M4K2S6	4164250888	3B
ROYAL YORK CLEANERS	1500 ROYAL YORK RD	TORONTO	ON	M9P3B7	4162414951	3B
RUSHTON CLEANERS	1169 DAVENPORT	TORONTO	ON	M6H2G6	4165361933	3B
RUSSELL CLEANERS	576 ST CLAIR W	TORONTO	ON	M6C1A6	4166518159	3B
S & W DRY CLEANING	1156 COLLEGE	TORONTO	ON	M6H1B6	4165337177	3B
SAM'S DRY CLEANING	2919 DUFFERIN	TORONTO	ON	M6B3S7	4167894473	3B
SANI FRESH CLEANING CENTER	6247 BATHURST	TORONTO	ON	M2R2A5	4162223211	3B
SARTORIA BOLOGNA TAILORS & CLEANERS	2540 EGLINTON W	TORONTO	ON	M6M1T1	4166516489	3B
SAVER CLEANERS & TAILORING	889 QUEEN E	TORONTO	ON	M4M1J4	4164692886	3B
SCARBORO CLEANERS	6 GLEN WATFORD DR	TORONTO	ON	M1S2C1	4162937743	3B
SCHEFFER'S DRY CLEANERS & COIN LAUNDRY	2901 LAKE SHORE BL W	TORONTO	ON	M8V1J3	4162593877	3B
SCHMOOTZ CLEANERS	209 HARBORD	TORONTO	ON	M5S1H6	4165335358	3B
SELECT LAUNDRY & DRY CLEANING	661 THE QUEENSWAY	TORONTO	ON	M8Y1K8	4162591374	3B
SHEBA'S CLEANERS	2240-A QUEEN	TORONTO	ON	M4E1G2	4166914195	3B
SHEPPARD & MARKHAM DRY CLEANERS & ALTERATIONS	5600 SHEPPARD AV E	TORONTO	ON	M1B2L4	4162918226	3B
SHEPPARD CLEANERS & TAILORS	620 SHEPPARD AV W	TORONTO	ON	M3J2P6	4166330375	3B
SHEPPARD DRY CLEANERS	4455 SHEPPARD AV E	TORONTO	ON	M1S3G9	4162981000	3B
SHEPPARD PLAZA CLEANERS & SHIRT LAUNDERERS LIMITED	630 SHEPPARD W	TORONTO	ON	M3H2S1	4166351046	3B
SID'S CLEANERS & TAILORS	526 EGLINTON W	TORONTO	ON	M5N1B4	4164839536	3B
SILVER MILE DRY CLEANERS & LAUNDERERS	3491 KINGSTON RD	TORONTO	ON	M1M1R4	4162616611	3B
SILVERTHORN CLEANERS & TAILORS LTD	1738 ST CLAIR W	TORONTO	ON	M6N1J3	4166563734	3B
SISTER CLEANING STITCHING	130 ADELAIDE W	TORONTO	ON	M5H3P5	4163630815	3B
SIX POINT CLEANERS	5168 DUNDAS W	TORONTO	ON	M9A1C4	4162331751	3B
SIXTY MINUTE CLEANERS LTD	369 DAVENPORT	TORONTO	ON	M5R1K5	4169232098	3B
SKETCHLEY CLEANERS	3 FINCH E	TORONTO	ON	M2N4P9	4162213022	3B
SKETCHLEY CLEANERS	5444 YONGE	TORONTO	ON	M2N6J4	4162296736	3B
SKETCHLEY CLEANERS	121 KING W	TORONTO	ON	M5H1J8	4163646581	3B
SKETCHLEY CLEANERS	133 WYNFORD DR	TORONTO	ON	M3C1K1	4164498180	3B
SKETCHLEY CLEANERS	CRESCENT TOWN	TORONTO	ON	M4C5L8	4166912701	3B
SKETCHLEY CLEANERS	560 CHURCH	TORONTO	ON	M4Y2E3	4169226982	3B

Dry Cleaners

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SKETCHLEY CLEANERS	1650 YONGE	TORONTO	ON	M4T2A2	4164828026	3R
SKETCHLEY CLEANERS	1696 BAYVIEW AV	TORONTO	ON	M4G3C4	4164854330	3R
SKETCHLEY CLEANERS	2346 YONGE	TORONTO	ON	M4P2E6	4164877007	3R
SKETCHLEY CLEANERS	136 REDPATH	TORONTO	ON	M4P2K4	4164896002	3R
SKETCHLEY CLEANERS	21 DAVISVILLE	TORONTO	ON	M4S1G3	4164896420	3R
SKETCHLEY CLEANERS	2305 QUEEN E	TORONTO	ON	M4E1G7	4166995846	3R
SKY 3/4 HOUR CLEANERS & LAUNDERERS	1602 DUNDAS W	TORONTO	ON	M6K1T8	4165363825	3R
SKY DRY CLEANERS	3095 EGLINTON E	TORONTO	ON	M1J2E9	4167643565	3R
SKYWAY CLEANERS	2207 BLOOR W	TORONTO	ON	M6S1N5	4167620048	3R
SMART LOOK CLEANERS	KING TRAIL PLAZA	TORONTO	ON	M1C1R4	4167824587	3R
SPEEDWAY CLEANERS LTD	3330 KEELE	TORONTO	ON	M3J1L5	4166365000	3R
SPENCER CLEANERS	99 SPENCER	TORONTO	ON	M6K2J7	4165320055	3R
SPOTLESS CLEANERS	366 COLLEGE	TORONTO	ON	M5T1S6	4169217321	3R
SPRING FRESH CLEANERS & COIN LAUNDRY	49-A BLAKE	TORONTO	ON	M4J3E2	4164616390	3R
ST LAWRENCE CLEANERS	123 FRONT E	TORONTO	ON	M5A1E3	4163621739	3R
STANLEY CLEANERS	922 MILLWOOD	TORONTO	ON	M4G1X3	4164211300	3R
STAR CLEANERS	1466 EGLINTON W	TORONTO	ON	M6E2G5	4167839576	3R
STAY FRESH CLEANERS	157 RAVEL	TORONTO	ON	M2N1T1	4164937080	3R
STEEPROCK DISCOUNT CLEANERS LTD	850 STEEPROCK DR	TORONTO	ON	M3J2X2	4166385999	3R
STELLA CLEANERS	164 GREENLAW	TORONTO	ON	M6H3V5	4166548646	3R
STERLING CLEANERS	394 DANFORTH AV	TORONTO	ON	M4K1P3	4164658222	3R
STRAIGHT CLEANERS	899 PAPE	TORONTO	ON	M4K3V1	4164656146	3R
SUDS DRY CLEANERS LTD	1015 BROADVIEW	TORONTO	ON	M4K2S1	4164217421	3R
SUN DRY CLEANERS	391 DAWES RD	TORONTO	ON	M4B2E6	4162881476	3R
SUNLIGHT DRY CLEANERS & LAUNDERERS (1983) LTD	302 THE EAST MALL	TORONTO	ON	M9B6R7	4162338861	3R
SUNLIGHT DRY CLEANERS TAILORS	691 BROADVIEW	TORONTO	ON	M4K2P4	4164653466	3R
SUPER CLEANERS	1182 WESTON	TORONTO	ON	M6M4P4	4162443508	3R
SUPERB DRY CLEANERS	2827 BATHURST	TORONTO	ON	M6B3A6	4167814884	3R
SUREWAY CLEANERS	2340 DUNDAS W	TORONTO	ON	M6P4A9	4165321039	3R
SWAN CLEANERS	517 ANNETTE	TORONTO	ON	M6P1S1	4167679435	3R
SWAN-C DRY CLEANERS	42 SOUTHPORT	TORONTO	ON	M6S3N3	4167621236	3R
TAM'S DRYCLEANERS & LAUNDRY	873 WILSON	TORONTO	ON	M3K1E6	4166351691	3R
TAYLOR'S CLEANERS & LAUNDERERS	24 MABELLE	TORONTO	ON	M9A4X7	4162339769	3R
TAYLOR'S CLEANERS & LAUNDERERS	20 STONEGATE PLAZA	TORONTO	ON	M8Y2K3	4162390401	3R
TAYLOR'S CLEANERS & LAUNDERERS	500 ORIOLE PKWY	TORONTO	ON	M5P2H8	4164817727	3R
TAYLOR'S CLEANERS & LAUNDERERS	22 BALLIOL	TORONTO	ON	M4S1C1	4164817883	3R
TAYLOR'S CLEANERS & LAUNDERERS	1439 KING W	TORONTO	ON	M6K1H9	4165365979	3R
TAYLOR'S CLEANERS & LAUNDERERS	735 RENFORTH	TORONTO	ON	M9C2N8	4166223078	3R
TAYLOR'S CLEANERS & LAUNDERERS	1730 BLOOR W	TORONTO	ON	M6P1B3	4167671729	3R
TAZ CLEANERS & CUSTOM TAILOR	796 MT PLEASANT	TORONTO	ON	M4P2L2	4164812714	3R
TIME CLEANERS	3342 DANFORTH AV	TORONTO	ON	M1L1C8	4166902574	3R
TINKER CLEANERS	63 WIDDICOMBE HILL BL	TORONTO	ON	M9R4B2	4162477602	3R
TOM & G DRY CLEANERS	1026 GERRARD E	TORONTO	ON	M4M1Z5	4164656649	3R
TOP CLEANERS	5512 LAWRENCE AV E	TORONTO	ON	M1C3B2	4162812340	3R
TOP HAT CLEANERS	830 BROWN'S LINE	TORONTO	ON	M8W3W2	4162597533	3R
TOP NOTCH CLEANERS	2756 YONGE	TORONTO	ON	M4N2J2	4164400139	3R
TOP NOTCH DRY CLEANERS & LAUNDERERS	632 BLOOR W	TORONTO	ON	M6G1K7	4165353375	3R
TRETHEWEY CLEANERS	1555 JANE	TORONTO	ON	M9N2R4	4162449392	3R
TRIOLO CLEANERS	6129 STEELES W	TORONTO	ON	M9L2V1	4167438443	3R
TRU-TEX CLEANERS & LAUNDERERS LTD	1035 COXWELL AV	TORONTO	ON	M4C3G4	4164213060	3R
TRU-TONE CLEANERS	2529 EGLINTON W	TORONTO	ON	M6M1T2	4166532798	3R
TURF CUSTOM CLEANERS	1620 WILSON AV	TORONTO	ON	M3L1A3	4162419961	3R
TUXEDO CLEANERS	42 TUXEDO CRT	TORONTO	ON	M1G3S3	4164397417	3R
TYMO CLEANERS & PRESSERS	1649 EGLINTON W	TORONTO	ON	M6E2H1	4167835567	3R

Dry Cleaners

BUSINESS NAME	ADDRESS	COMMUNITY	PRO	PAC	TELEPHONE	REGION
ULTRA CLEANERS & TAILORS	791 LAWRENCE AV W	TORONTO	ON	M6A1C2	4167814572	3B
UNI-CARE CLEANERS LTD	1410 VICTORIA PARK	TORONTO	ON	M4A2L8	4167551879	3B
UNIVERSITY COLONY CLEANING CENTRE	108 HUCKNALL	TORONTO	ON	M3J1V8	4166350534	3B
UPTOWN HAND LAUNDRY & DRY CLEANERS	1287 YONGE	TORONTO	ON	M4T1W5	4169211780	3B
VALET CARE DRY CLEANERS	66 AVENUE RD	TORONTO	ON	M5R3N8	4169609332	3B
VENICE CLEANERS	301 SILVERSTONE DR	TORONTO	ON	M9V3J6	4167454653	3B
VENUS ONE HOUR DRY CLEANERS	1232 KING W	TORONTO	ON	M6K1G4	4165322228	3B
VIC-TONE CLEANERS	4866 YONGE	TORONTO	ON	M2N5N2	4162212231	3B
VICTONE CLEANERS	933 THE QUEENSWAY	TORONTO	ON	M8Z1P3	4162555751	3B
VICTOR CLEANERS	205 DELAWARE	TORONTO	ON	M6H2T4	4165366999	3B
VICTORIA PARK CLEANERS	1711 VICTORIA PK	TORONTO	ON	M1R1R7	4167553041	3B
VILLAGE CLEANERS	105 LOTHERTON PATHWAY	TORONTO	ON	M6B2G6	4167872258	3B
VILLAGE CLEANERS & SHOE REPAIR INC	323-A LONSDALE	TORONTO	ON	M4V1X3	4164851477	3B
VILLAGE GREEN DRY CLEANERS	66 ALEXANDER	TORONTO	ON	M4Y1B4	4169219696	3B
VISA CLEANERS	900 ALBION	TORONTO	ON	M9V1A5	4167423423	3B
WEST MALL CLEANERS	720 THE WEST MALL	TORONTO	ON	M9C2X1	4166260771	3B
WESTERN CLEANERS	2645 LAWRENCE AV E	TORONTO	ON	M1P2S2	4167557952	3B
WESTON CLEANERS	1375 WESTON	TORONTO	ON	M6M4S1	4162444637	3B
WESTOWN CLEANERS & SHIRT LAUNDERERS	235 DIXON RD	TORONTO	ON	M9P2M5	4162414512	3B
WESTVIEW CLEANERS	1967 WESTON	TORONTO	ON	M9N1W8	4162481688	3B
WHEELER'S DRIVE-IN CLEANERS	5926 YONGE	TORONTO	ON	M2M3V7	4162261232	3B
WHITE BUNNY CLEANERS & LAUNDRY	2139 WESTON	TORONTO	ON	M9N1X8	4162485151	3B
WHITE ORCHID DRY CLEANERS	3525 BATHURST	TORONTO	ON	M6A2C7	4167839517	3B
WILKE'S CLEANERS	894 QUEEN E	TORONTO	ON	M4M1J3	4164658195	3B
WILLOW CLEANERS & TAILORS	463A ST JOHN'S RD	TORONTO	ON	M6S2L1	4167698603	3B
WILLOWDALE DRIVE-IN CLEANERS	219C SPRING GARDEN AV	TORONTO	ON	M2N3G7	4162258933	3B
WOODMOUNT CLEANERS	552 MARLEE	TORONTO	ON	M6B3J4	4167835597	3B
WOODVIEW CLEANERS LTD	3220 WESTON	TORONTO	ON	M9M2T7	4167429707	3B
X-PRESS CLEANERS	181 UNIVERSITY	TORONTO	ON	M5H3M7	4168691867	3B
YIP CHAS LAUNDRY & DRY CLEANERS	938 QUEEN E	TORONTO	ON	M4M1J7	4164666923	3B
YOUR FAVOUR SERVICE DRY CLEANERS & PROFESSIONAL	2397 FINCH W	TORONTO	ON	M9M2X1	4167497915	3B
YUK WING CLEANERS	1324 GERRARD E	TORONTO	ON	M4L1Z1	4164667317	3B
ZIP 1 HR CLEANERS & SHIRT LAUNDERERS LTD	812 DANFORTH AV	TORONTO	ON	M4J1L6	4164615431	3B
ASHBURY DRYCLEANERS	424 SUMMERHILL	TORONTO	ON	M4N2E4	4169620627	
BRIGHT LOOK 2 CLEANERS	338 PAPE	TORONTO	ON	M4K3P4	4164614810	
CAREFUL HAND LAUNDRY & DRY CLEANERS	253 DAVENPORT	TORONTO	ON	M5R2H8	4169231202	
CARTE BLANCHE CLEANERS	425 JANE	TORONTO	ON	M6S3Z7	4167697181	
CHESTER CLEANERS LTD	1020 KINGSTON RD	TORONTO	ON	M4E1T4	4166943290	
DANDY CLEANERS	310 DUNDAS E	TORONTO	ON	M5A2B8	4169212257	
HARBOUR STOP CLEANERS	40 ASQUITH	TORONTO	ON	M4W N6	4169608091	

Dry Cleaners

BUSINESS NAME	ADDRESS	COMMUNITY	PRO PAC	TELEPHONE	REGION
TOWN'N COUNTRY CLEANERS	204 KING W	BROCKVILLE	ON	6133427407	3
ALBRIGHT CLEANERS	2?? AVENUE RD	TORONTO	ON	416 921694?	3
ALLISTON SPEED CLEANERS	? CHURCH N	ALLISTON	ON	705 435 9211	3
TWIN DRIVE-IN CLEANERS LTD	NORTHCREST MALL	PETERBOROUGH	ON	7057436555	3
BESTWAY CLEANERS	1 EGLINGTON E	TORONTO	ON	416 487 5157	3
BRIDLEWOOD CLEANERS	49 MISSISSAUGA RD N	PORT CREDIT	ON	416 278 1579	3
VENICE CLEANERS	110 ANSLEY GROVE RD	WOODBRIDGE	ON	4168515179	3
VILLAGE CLEANING CENTRE	1415 PELHAM	PELHAM	ON	4168925611	3
BROADWAY CLEANERS	ORANGEVILLE MALL	ORANGEVILLE	ON	5199418941	3
WALKERS CLEANERS	4481 HWY 7 E	UNIONVILLE	ON	4164772773	3
WESTBURN DRY CLEANERS	WESTBURN PLAZA	COOKSVILLE	ON	4168486233	3
WHITE CROW CLEANING	385 SPADINA RD	TORONTO	ON	4164821417	3
WHITE OAK CLEANERS	RIVER OAKS PLAZA	OAKVILLE	ON	4168457268	3
TIP TOP CLEANERS	5200 FINCH E	TORONTO	ON	4162993005	3
TOMKEN CLEANERS	925 RATHBURN E	COOKSVILLE	ON	416276494?	3
TONY'S CLEANERS	VILLAGE PLAZA	BRAMPTON	ON	4164574797	3
BRYERS DRYCLEANER	55 QUEEN'S QUAY W	TORONTO	ON	416 3611347	3
BURLINGTON DRYCLEANERS	150 APPLEBY LINE	BURLINGTON	ON	4166347133	3
LUCKY STAR CLEANERS	2104 HWY 7W	THORNHILL	ON	4167382161	3
CHOICE CLEANERS	GLEN AGNES PLAZA	TORONTO	ON	416 2335154	3
COTTY'S CLEANERS LTD	FIRST	COLLINGWOOD	ON	7054456361	3
MANOR CLEANERS LTD	FONTHILL SHOPPING CENTRE	PELHAM	ON	4168922501	3
MARKET SQUARE DRY CLEANERS	MARKET SQUARE	TORONTO	ON	4163642984	3
MARTINIZING DRY CLEANERS & LAUNDERERS	KINGSTON HEIGHTS PLAZA	SOUTH PICKERING	ON	4168313417	3
COUNTRY CLUB CLEANERS	1 RAYMERVILLE DR	MARKHAM	ON	416 2946330	3
MCCLEANS CUSTOM CLEANERS	11-80 THICKSON S	WHITBY	ON	4166681333	3
NEW GATE CLEANERS	1065 DAVIS DR	NEWMARKET	ON	4168985064	3
NEW SUSAN CLEANERS	208 CORONATION DR	TORONTO	ON	4162827427	3
CREDIT VALLEY CLEANERS	2220 CREDIT VALLEY RD	STREETSVILLE	ON	416 8210529	3
CRONIN CLEANERS	6285 MILLER'S GROVE	STREETSVILLE	ON	416 8241770	3
OAKDALE CLEANERS	GEORGIAN MALL	BARRIE	ON	7057262117	3
DELUX DRYCLEANERS	360 GUELPH	GEORGETOWN	ON	416 8771254	3
FARMERS CLEANERS	6750 WINSTON CHURCHILL	STREETSVILLE	ON	4168240561	3
FARMERS CLEANERS	7357 YONGE	THORNHILL	ON	4168899066	3
DUPONT CLEANERS	677 DUPONT	TORONTO	ON	4165352001	3
DUTCH RIVER CLEANERS	18272 YONGE	NEWMARKET	ON	416 8530269	3
EMPRESS CLEANERS	2070 LIVERPOOL	SOUTH PICKERING	ON	416 8396731	3
FAIRVIEW CLEANERS	RICHMOND HEIGHTS SH. CENTRE	RICHMOND HILL	ON	4168831234	3
PIONEER VILLAGE DRY CLEANERS LTD	3200 STEELES W	THORNHILL	ON	4167389009	3
PLATIS AND SONS 1 HR CLEANERS	3404 SOUTH MILLWAY	STREETSVILLE	ON	4168287374	3
GATTO'S DRY CLEANERS	630 ABERDEEN	WOODBRIDGE	ON	4168519953	3
GUARANTY CLEANERS	742 KING W	TORONTO	ON	4169479381	3
HAIRE BROS CLEANERS	ROSEBURY SQ	TORONTO	ON	4167874674	3
J & P CLEANERS	ROCKHILL + BRANDON DR	MALTON	ON	416 6770769	3
JEFFERSON CLEANERS	77 MAITLAND PL	TORONTO	ON	416 9280518	3
RICH CLEANERS	11 IVY BUSH	TORONTO	ON	4162991080	3
RIVENDELL CLEANERS	1100 DUNDAS W	COOKSVILLE	ON	4162701956	3
ROSEVIEW CLEANERS LTD	9625 YONGE	RICHMOND HILL	ON	4168842300	3
LANGFORD CLEANERS	?NBROOK SHOPPING PLAZA	OAKVILLE.	ON	416845?422	3
SELECT CLEANERS	245 EDINBURGH S	GUELPH	ON	5198365860	3
SKETCHLEY CLEANERS	LORNEWOOD PLAZA	PORT CREDIT	ON	4162748704	3
FAMILY CLEANERS	NEWTONBROOK PLAZA	TORONTO	ON	416 2250561	3
SKETCHLEY CLEANERS	MARKVILLE SHOPPING PLAZA	UNIONVILLE	ON	4164770675	3
SKETCHLEY CLEANERS	OTTER CREEK PLAZA	WHITBY	ON	4166683363	3

BUSINESS NAME	ADDRESS	COMMUNITY	PRO	FAC	TELEPHONE	REGION
** 3C						
ANDRES DRY CLEANERS	126 QUEEN	NIAGARA-ON-THE-LA	ON	POS1J0	4164683641	3C
ANGUS CLEANERS & TAILORS	RAINBOW MALL	BORDEN	ON	LOM1B0	7054241700	3C
ANGUS VILLAGE DRY CLEANERS	58 QUEEN	BORDEN	ON	LOM1B0	7054249666	3C
ARMSTRONG CLEANERS	24 PARIS S	ALLISTON	ON	LOM1A0	7054357390	3C
BAY CLEANERS	378 BAY W	BEAVERTON	ON	LOK1A0	7054267161	3C
ST LAWRENCE CLEANERS	603 CHURCH	TORONTO	ON		416922[illegible]	3
BLUE JAY DRY CLEANERS	14 MAIN W	CHELMSFORD	ON	POM1L0	7058554567	3C
BOLTON DRY CLEANERS	301 QUEEN S	BOLTON	ON	LOP1A0	4168573340	3C
BRADFORD CUSTOM CLEANERS	14 CENTRE	BRADFORD	ON	LOG1C0	4167752172	3C
STAY CLEAN CLEANERS	5 [illegible] ANDERSON	WHITBY	ON		41666855[illegible]	3
BROWNSVILLE DRY CLEANERS	SCHOMBERG	SCHOMBERG	ON	LOG1T0	4169397498	3C
CALEDON EAST DRY CLEANERS	50 AIRPORT RD N	CALEDON EAST	ON	LON1E0	4165849923	3C
[illegible] DRY CLEANERS LTD	3365 FAIRVIEW	BURLINGTON	ON		4166344363	3
SUPERIOR DRY CLEANERS	1 STONE MASON DR	MARKHAM	ON		41647[illegible]	3
[illegible] CLEANERS	432 DAVIES	TORONTO	ON	M4R 2L7	41675[illegible]	3
[illegible]	[illegible] WESTON	TORONTO	ON	M6N 3S4	41676[illegible]	3
COUNTRY FRESH DRY CLEANERS	12 QUEEN N	TOTTENHAM	ON	LOG1W0	4169362456	3C
D-LUX CLEANERS	187 KING SIDE RD	KING CITY	ON	LOG1K0	4168333589	3C
DOUBLE-H CLEANERS	16 BROCK W	UXBRIDGE	ON	LOC1K0	4168526986	3C
[illegible] CLEANERS	3785 KINGSTON RD	TORONTO	ON	M1J3M4	41626[illegible]	3
EXCEL CLEANERS	15 ALLAN DR	BOLTON	ON	LOP1A0	4168573428	3C
[illegible]	25 ST [illegible] RD	TORONTO	ON	M6P1T7	41676[illegible]	3
GOLDEN'S CLEANERS	69 HIGH	SUTTON O	ON	LOE1R0	4167226080	3C
MARK 1 CLEANERS	937 KINGSTON RD	TORONTO	ON	M4E1S6	41669[illegible]	3C
HANK'S CLEANING CENTRE LTD	BRADFORD PLAZA	BRADFORD	ON	LOG1C0	4167753561	3C
LINDSAY DRY CLEANERS & COIN LAUNDRY	36 FRONT	ORILLIA	ON		7053257744	3
LONDON CLEANERS	3376 KENNEDY	TORONTO	ON		4162925255	3
LUCIDEX LTD	1050 ROWNTREE DAIRY RD	WOODBRIDGE	ON		4168519678	3
SKETCHLEY CLEANERS	SOUTHGATE VILLAGE PLAZA	BRAMPTON	ON		4167922276	
SKETCHLEY CLEANERS	MILLWAY SHOPPING CENTRE	STREETSVILLE	ON		4168281010	3
SKETCHLEY CLEANERS	ONTARIO S	MILTON	ON		4168780888	3
SKETCHLEY CLEANERS	YONGE EGLINTON CENTRE	TORONTO	ON		4164810904	3
SMARTEX DRY CLEANERS	LAURIER CENTRE	MILTON	ON		4168761446	
SPEED QUEEN LAUNDRY & DRY CLEANING	AVONDALE SHOPPING CENTRE	BRAMPTON	ON		4167932194	3
MARTIN'S CLEANERS	555 BURNHAMTHORPE RD	TORONTO	ON	M9C 2[illegible]	4166211200	3
[illegible]'S LAUNDRY + DRYCLEANING	1644 QUEEN ST	TORONTO	ON	M6[illegible]	416691681[illegible]	3
NOBLETON CLEANERS	NOBLETON PLAZA	NOBLETON	ON	LOG1N0	4168593933	3C
NORLYN CLEANERS	BALLANTRAE PLAZA	STOUFFVILLE	ON	LOH1L0	4166402485	3C
[illegible] LAUNDRY	282 DUPONT	TORONTO	ON	M5R1V9	416923[illegible]	3
NORTHLAND CLEANING	11 CLIFF AV	HUNTSVILLE	ON	POA1K0	7057892707	3C
ONE-HOUR MARTINIZING & COIN LAUNDRY	110 MAIN E	HUNTSVILLE	ON	P0A1S0	7057899122	3C
PARKERS CLEANERS LTD	230 SANDALWOOD PKWY	SNELGROVE	ON	LOP1M0	4168463633	3C
PORT CLEANERS	255 QUEEN	PORT PERRY	ON	LOB1N0	4169857105	3C
QUEENSWAY CLEANERS THE	20907 DALTON	SUTTON O	ON	LOE1R0	4167226680	3C
QUIGLEY CLEANERS	37 MAIN	PENETANGUISHENE	ON	LOK1P0	7055497286	3C
RAINBOW CLEANERS	175 ST JOHN'S RD	STROUD	ON	LOL2M0	7054364560	3C
RIDLEY CLEANERS	17 MANITOBA	BRACEBRIDGE	ON	POB1C0	7056452111	3C
RITE-WAY CLEANERS	61 KING WILLIAM	HUNTSVILLE	ON	POA1K0	7057899271	3C
STOUFFVILLE CLEANERS	STOUFFVILLE PLAZA	STOUFFVILLE	ON	LOH1L0	4166401352	3C
STURGEON FALLS CLEANERS LAUNDRY & TAILORS	45 WILLIAM	STURGEON FALLS	ON	POH2G0	7057530610	3C
SUNRISE ONE HOUR CLEANERS & TAILORS	220 MAIN E	STOUFFVILLE	ON	LOH1L0	4166404836	3C
SUPERIOR DRY CLEANERS	42 SOMERVILLE	STOUFFVILLE	ON	LOH1L0	4166403612	3C
TAWCO COIN LAUNDRY & DRY CLEANING CENTRE	SCUGOG	PORT PERRY	ON	LOB1N0	4169853355	3C

Dry Cleaners

BUSINESS NAME	ADDRESS	COMMUNITY	PRV	PAC	TELEPHONE	REGION
NEW YORK' CLEANERS	2191 [illegible] N	TORONTO	ON	M6S1N7	[illegible]	3
THE CLEANING CENTRE	66 MAIN	MOUNT ALBERT	ON	L0G1M0	4164733276	3C
TOTTENHAM CLEANERS	55 QUEEN S	TOTTENHAM	ON	L0G1W0	4169362816	3C
SCARBORO CLEANERS	1141 KENNEDY	TORONTO	ON	M1P2L2	4167514104	3
TOWN & COUNTRY CLEANERS	BRADFORD PLAZA	BRADFORD	ON	L0G1C0	4167752342	3C
VALLEY VIEW CLEANERS	263 HWY 69 N	HANMER	ON	P0M1Y0	7059695155	3C
VEZEAU'S DRY CLEANERS	425 PINEDALE	GRAVENHURST	ON	P0C1G0	7056872571	3C
VILLAGE DRY CLEANERS & ALTERATIONS SHOP	48 QUEEN N	BOLTON	ON	L0P1A0	4168573492	3C
SUN DRY CLEANERS (1)	1620 ALBION	TORONTO	ON	M9V1B4	416742335[illegible]	3

Dry Cleaners

BUSINESS NAME	ADDRESS	COMMUNITY	PRO	PAC	TELEPHONE	REGION
** 4A						
ALTA VISTA DRY CLEANERS & TAILORING	1581 ALTA VISTA DR	OTTAWA	ON	K1G0E9	6137313273	4A
ANGELO'S DRY CLEANERS	K MART PLAZA	KINGSTON	ON	K7M4X7	6133895713	4A
BANK STREET LAUNDRY & DRY CLEANING	779 BANK	OTTAWA	ON	K1S3V5	6132334254	4A
BARRHAVEN DRY CLEANING	808 GREENBANK RD	JOCKVALE	ON	K2J1A2	6138254298	4A
BETTY BRITE CLEANERS	467 ELGIN	OTTAWA	ON	K2P2H2	6132350783	4A
BROCKVILLE CLEANERS LTD	20 STUART	BROCKVILLE	ON	K6V2E7	6133422025	4A
BROWN'S CLEANERS	286 ELGIN	OTTAWA	ON	K2P1M3	6137348808	4A
CAMPUS CLEANERS	JOHN DEUTSCH CENTER	KINGSTON	ON	K7L1X5	6135492329	4A
CARLETON CLEANERS LTD	27 BRIDGE	CARLETON PLACE	ON	K7C2V2	6132571972	4A
CASH CLEANERS	174 GLOUCESTER	OTTAWA	ON	K2P0A6	6132340706	4A
CHAMPLAIN CLEANERS	2864 ST JOSEPH BL	ORLEANS	ON	K1C1G7	6138241470	4A
CHAMPLAIN ONE HOUR CLEANERS	534 MONTREAL RD	OTTAWA	ON	K1K0T9	6137492947	4A
CITY CLEANERS & SHIRT LAUNDERERS	160 MOIRA E	BELLEVILLE	ON	K8P2S6	6139686407	4A
CLEAN-WAY	617 MAIN E	HAWKESBURY	ON	K6A1B3	6136323854	4A
CLEANAWAY	318 LISGAR	OTTAWA	ON	K2P0E2	6132351311	4A
CLEANRITE CLEANERS	81 FOSTER	PERTH	ON	K7H1R9	6132671442	4A
CYRVILLE CLEANERS NETTOYEURS LTEE	1094 CYRVILLE RD	OTTAWA	ON	K1J7S7	6137492288	4A
DAIGNEAULT CLEANERS LTD	213 MONTREAL RD	CORNWALL	ON	K6H1B5	6139333812	4A
DELUXE CLEANERS	743 REGENT	HAWKESBURY	ON	K6A1G5	6136322232	4A
DENIS PAUL CLEANERS NETTOYEURS	340 ALICE	CORNWALL	ON	K6H4S2	6139322765	4A
DUTCH GIRL CLEANERS	1760 ST LAURENT BL	OTTAWA	ON	K1G1A2	6135212695	4A
ECONO DRY CLEANING & COIN LAUNDRY	250 QUEEN	KINGSTON	ON	K7K1B6	6135469030	4A
FLINDALL'S LTD	851 PRINCESS	KINGSTON	ON	K7L1G7	6135484407	4A
FORTUNE CLEANERS	13 WILLIAM E	SMITHS FALLS	ON	K7A1C1	6132833688	4A
FRASER CLEANERS	1665 CYRVILLE RD	OTTAWA	ON	K1B4W7	6137492286	4A
G JEFFERSON DRY CLEANERS	435 ALBERT	OTTAWA	ON	K1R7X4	6132381026	4A
GLEBE FASHION CLEANERS	831 BANK	OTTAWA	ON	K1S3V9	6132359776	4A
GUS' COIN LAUNDRY & DRY CLEANING	7 HICKSON AV	KINGSTON	ON	K7K2N4	6135466822	4A
H & L CLEANERS	232 RAGLAN S	RENFREW	ON	K7V1R1	6134324669	4A
HILLALY'S DRY CLEANERS	62 ROBERTSON RD	OTTAWA	ON	K1H8R2	6138295295	4A
HUNT CLUB DRY CLEANING	800 HUNT CLUB RD	OTTAWA	ON	K1V8S8	6135233633	4A
IDEAL FAMILY CLEANERS LTD	261 PROSPECT	HAWKESBURY	ON	K6A2M4	6136322072	4A
LATIMER'S CLEANERS	115 GEORGINA	GANANOQUE	ON	K7G1M5	6133824328	4A
LLOYD'S CLEANERS	160 CATHARINE	BELLEVILLE	ON	K8P1M8	6139685543	4A
MAJESTIC DRY CLEANERS	112 COLLEGE W	BELLEVILLE	ON	K8P2G5	6139625997	4A
MAPLE LEAF CLEANERS	31 9 ST E	CORNWALL	ON	K6H6R3	6139337923	4A
MAXWELL'S SMOKE SHOP & DRY CLEANERS	119 SLATER	OTTAWA	ON	K1P5H2	6132381992	4A
METRO DRY CLEANERS	2233 ST LAURENT BL	OTTAWA	ON	K1G1R1	6137373383	4A
MID-TOWN CLEANERS & SHIRT LAUNDRY	171 PRINCE	PEMBROKE	ON	K8A4L6	6137355246	4A
MID-TOWN CLOTHES PRESS	171 PRINCE	PEMBROKE	ON	K8A5H9	6137322945	4A
MODERN DRY CLEANERS	571 BRONSON	OTTAWA	ON	K1R6K2	6132351497	4A
NAPANEE DRY CLEANERS AND UNIFORM RENTALS LTD	33 DUNDAS W	NAPANEE	ON	K7R1Z3	6133544313	4A
NETTOYEURS IDEAL CLEANERS	236 MARIER	OTTAWA	ON	K1L5R3	6137456430	4A
NETTOYEURS MAJESTIC DRY CLEANERS	323 ST LAURENT BL	OTTAWA	ON	K1K2Z5	6137447619	4A
NORTHTOWN CLEANERS	135 CANNIFTON RD	BELLEVILLE	ON	K8N4V4	6139669019	4A
ONE HOUR DRY CLEANERS	SHOPPING CENTRE	SMITHS FALLS	ON	K7A2Y3	6132830705	4A
ONE HOUR MARTINIZING	751-C BATH RD	KINGSTON	ON	K7M4Y1	6133893989	4A
ONE-HOUR CLEANERS	12 KING W	BROCKVILLE	ON	K6V3P6	6133451608	4A
PALMER CLEANERS	956 MERIVALE RD	OTTAWA	ON	K1Z6A2	6137292098	4A
PARAGON CLEANERS	82 O'CONNOR	OTTAWA	ON	K1P5M7	6132356338	4A

Dry Cleaners

BUSINESS NAME	ADDRESS	COMMUNITY	PRO	PC	TELEPHONE	REGION
PARKWOOD HILLS CLEANERS	2-1127 MEADOWLANDS DR E	OTTAWA	ON	K2E6J5	6137273903	4A
PARSONS' CLEANERS & LAUNDERERS	57 GRAHAM	BELLEVILLE	ON	K8P1P4	6139625377	4A
PATTON'S CLEANERS	349 PRINCESS	KINGSTON	ON	K7L1B7	6135463626	4A
PEARL DRY CLEANERS	354-B RICHMOND RD	OTTAWA	ON	K2A0E8	6137229930	4A
QUALITY FIRST DRY CLEANING AND LAUNDRY	16 4 ST E	CORNWALL	ON	K6H2H8	6139322672	4A
RENFREW CLEANERS	94 PLAUNT S	RENFREW	ON	K7V1M6	6134322212	4A
RIDEAU 1 HR CLEANERS	202 PERCY	SMITHS FALLS	ON	K7A4W8	6132830444	4A
ROSE CLEANERS	2357 CARLING AV	OTTAWA	ON	K2B7G7	6137269466	4A
ROSEBUD CLEANERS	351 ST LAURENT BL	OTTAWA	ON	K1K2Z5	6137456955	4A
SENTINEL CLEANERS	RIDEAU VIEW SHOPPING CENTRE	OTTAWA	ON	K2C1N6	6132255868	4A
SNIDER'S CLEANERS	369 KING E	KINGSTON	ON	K7K2Y1	6135461166	4A
SOUTH BANK CLEANERS	2529 BANK	OTTAWA	ON	K1V8R9	6135219037	4A
SPEEDY DRY CLEANING & ALTERATIONS	161 1/2 PINNACLE	BELLEVILLE	ON	K8N3A5	6139627146	4A
SPIC AND SPAN CLEANERS	1525 MERIVALE RD	OTTAWA	ON	K2G3J3	6132241889	4A
SPOTLESS CLEANERS	97 DIVISION	TRENTON	ON	K8V4W9	6133923556	4A
STERLING CLEANERS (BROCKVILLE) LTD	125 STEWART BD	BROCKVILLE	ON	K6V4W4	6133426895	4A
SUPER CLEANERS	8 BRIDGE E	NAPANEE	ON	K7R1J6	6133544638	4A
SUPREMA DRYCLEANERS	617 CENTER	OTTAWA	ON	K1A2N8	6137443489	4A
TAWCO CLEANING CENTER	THOUSAND ISLANDS MALL	BROCKVILLE	ON	K6V3G8	6133429916	4A
TAY-TOWNE CLEANERS	106 GORE E	PERTH	ON	K7H1J3	6132671567	4A
TEMPLETON CLEANERS	114 JOHN N	ARNPRIOR	ON	K7S2N6	6136235393	4A
TOWN'N COUNTRY CLEANERS	R R 1	BROCKVILLE	ON	K6V5T1	6133420028	4A
TRENTON DRY CLEANERS	33 ONTARIO	TRENTON	ON	K8V2G7	6133923342	4A
TROY CLEANERS LTD	400 SPENCE AV	HAWKESBURY	ON	K6A2Y3	6136329302	4A
VALETOR CLEANERS	1233 WELLINGTON	OTTAWA	ON	K1Y2Z9	6137228434	4A
VANIER CLEANERS (DIV OF PROTEC ENERGIE LTEE)	94 MONTREAL RD	OTTAWA	ON	K1L6E6	6137468179	4A
VOGUE CLEANERS	CFB PETAWAWA	PETAWAWA	ON	K8H1X2	6136874830	4A
VOGUE CLEANERS	226 HINCKS	PEMBROKE	ON	K8A4N8	6137322685	4A
WALKLEY CLEANERS	1414 WALKLEY RD	OTTAWA	ON	K1V9A8	6135238078	4A
WEST END DRY CLEANERS	WEST END MALL	PEMBROKE	ON	K8A7T1	6137324316	4A
WOODLAND CLEANERS LTD	514 DUNDAS E	BELLEVILLE	ON	K8N1G3	6139684011	4A

Dry Cleaners

BUSINESS NAME	ADDRESS	COMMUNITY	PRO	PAC	TELEPHONE	REGION
** 4B						
ABELS' ODORLESS DRY CLEANERS	13 QUEEN W	CHESTERVILL	ON	K0C1H0	6134482135	4B
ALEXANDRIA CLEANERS	294 MAIN S	ALEXANDRIA	ON	K0C1A0	6135252424	4B
BANCROFT CLEANERS	81 HASTINGS N	BANCROFT	ON	K0L1C0	6133322333	4B
BONNECHERE CLEANERS	BONNECHERE	EGANVILLE	ON	K0J1T0	6136282834	4B
CENTRE TOWNE CLEANERS	CENTRE	PRESCOTT	ON	K0E1T0	6139252647	4B
CLASSIC CLEANERS	115 BRIDGE W	CAMPBELLFORD	ON	K0L1L0	7056532331	4B
CROWN CLEANERS	246 MARY	TWEED	ON	K0K3J0	6134782603	4B
DEEP RIVER CLEANERS LTD	RR 1 CHALK RIVER	DEEP RIVER	ON	K0J1P0	6135842140	4B
DESERONTO CLEANERS LTD	ST GEORGE	DESERONTO	ON	K0K1X0	6133962019	4B
KANATA CLEANERS	TERON PLAZA	KANATA-STITTSVILL	ON	K0A3G0	6135923736	4B
KEMPTVILLE CLEANERS	130 PRESCOTT	KEMPTVILLE	ON	K0G1J0	6132585332	4B
LONG ISLAND CLEANERS	16 MAIN	MANOTICK	ON	K0A2N0	6136926157	4B
MANOTICK CLEANERS	MAIN	MANOTICK	ON	K0A2N0	6136923886	4B
METRO CLEANERS	149 MAIN	PICTON	ON	K0K2T0	6134762785	4B
PARKER CLEAN	KANATA TOWN CENTRE	KANATA-STITTSVILL	ON	K0A3G0	6135925691	4B
PICTON CLEANERS & TAILORS	192 MAIN	PICTON	ON	K0K2T0	6134766072	4B
RICHMOND CLEANERS	RICHMOND SHOPPING PLAZA	RICHMOND O	ON	K0A2Z0	6138385233	4B
ROCKLAND CLEANERS	2611 LAURIER	ROCKLAND	ON	K0A3A0	6134464547	4B
ROGER'S CLEANERS	55 MAIN S	KANATA-STITTSVILL	ON	K0A3G0	6138364580	4B
SEAWAY DRY CLEANERS	SHOPPING CENTRE	MORRISBURG	ON	K0C1X0	6135432217	4B
TOWN N COUNTRY DRY CLEANERS	270 EDWARD	PRESCOTT	ON	K0E1T0	6139255790	4B

Dry Cleaners

BUSINESS NAME	ADDRESS	COMMUNITY	PRO	FAC	TELEPHONE	REGION
** 5						
AIME'S DRY CLEANING SERVICE	255 3AVE	TIMMINS	ON	P4N1E2	7052641610	5
BONNIE CLEANERS	160 GORE	SAULT STE MARIE	ON	P6A1M2	7052566288	5
BYNG DRY CLEANERS	8 BYNG	KAPUSKASING	ON	P5N1W3	7053353440	5
CASCADE LAUNDRY & DRY CLEANERS	371 LORNE S	SUDBURY	ON	P3C4R1	7056758363	5
FIRST CHOICE DRYCLEANERS & LAUNDRY	8 BRUNSWICK WALK	ELLIOT LAKE	ON	P5A2A8	7058483641	5
FOCH CLEANERS	721 QUEEN E	SAULT STE MARIE	ON	P6A2A8	7052562292	5
HARRIS DRY CLEANERS	156 LAKESHORE DR	NORTH BAY	ON	P1A2A8	7054744660	5
HEAD TO FOOT CLEANERS	1181 CASSELLS	NORTH BAY	ON	P1B4B4	7054740440	5
HIGH FASHION CLEANERS LTD	K-MART PLAZA	SAULT STE MARIE	ON	P6B4H6	7052541428	5
HUDSON DRY CLEANERS	76 KATHLEEN	SUDBURY	ON	P3C2L9	7056747563	5
LEWIS CLEANERS	815 LORNE	SUDBURY	ON	P3C4R5	7056742111	5
LIVELY DRY CLEANING SERVICE	351 ELM W	SUDBURY	ON	P3C1V7	7056733101	5
LUSTERWAY CLEANERS LTD	316 WELLINGTON E	SAULT STE MARIE	ON	P6A2L9	7052531105	5
NEW METHOD DRY CLEANERS & LAUNDRY SERVICE	33 CEDAR N	TIMMINS	ON	P4N6H8	7052641341	5
NEWTON DRY CLEANERS	4 RIVER	PARRY SOUND	ON	P2A2T6	7057465013	5
NORTHWAY CLEANERS	1820 ALGONQUIN	NORTH BAY	ON	P1B4Z1	7054724230	5
PARKWAY CLEANERS	1496 WELLINGTON E	SAULT STE MARIE	ON	P6A2R1	7052567434	5
PARRY SOUND CLEANERS	116 WILLIAM	PARRY SOUND	ON	P2A1V8	7057462761	5
QUICK CLEAN CENTRE	5 GREAT NORTH RD	PARRY SOUND	ON	P2A1N3	7057465415	5
SNOW WHITE LAUNDRY & CLEANERS LTD	17 QUEEN W	SAULT STE MARIE	ON	P6A1A1	7052565644	5
SOO CLEANERS	793 QUEEN E	SAULT STE MARIE	ON	P6A2A8	7059492111	5
SPIC & SPAN CLEANERS & LAUNDRY	106 GOV'T W	KIRKLAND LAKE	ON	P2N2E4	7055679325	5
STARLITE CLEANERS	1610 REGENT S	SUDBURY	ON	P3E3Z6	7055220400	5
STATION MALL DRY CLEANING & COIN WASH	STATION MALL	SAULT STE MARIE	ON	P6A1W8	7059495698	5
SUDBURY STEAM LAUNDRY & DRY CLEANERS	208 WALNUT	SUDBURY	ON	P3C1L7	7056756495	5
SUNSHINE CLEANERS	351 ELM W	SUDBURY	ON	P3C1V7	7056733633	5
SUPERIOR CLEANERS (CAMBRIAN)	44 GREAT NORTHERN RD	SAULT STE MARIE	ON	P6B4Y5	7052532451	5
SUPREME CLEANERS	424 PIM	SAULT STE MARIE	ON	P6B2V1	7059426068	5
TILLEY'S ECONO WASH DRY CLEANING LTD	230 1 AVE	TIMMINS	ON	P4N1H5	7052648064	5
TRU-WAY DRIVE IN CLEANERS	316 2 LINE W	SAULT STE MARIE	ON	P6C2J5	7052565335	5
UPTOWN CLEANERS LTD	1500 PARIS	SUDBURY	ON	P3E3B7	7055222904	5
BETTY BRITE CLEANERS	CENTRAL PLAZA	NORTH BAY	ON		7054744990	5
A-1 CLEANERS	CITY CENTRE	SUDBURY	ON		7056745714	5
SUDBURY STEAM LAUNDRY & DRYCLEANERS	295 HILLSIDE PLAZA	ELLIOT LAKE	ON		7054619495	5
FIRST CHOICE DRYCLEANERS	5 PERINI RD	ELLIOT LAKE	ON		7058482662	5
GBA SERVICES	CITY CENTRE	SUDBURY	ON		7056736262	5
SUDBURY STEAM LAUNDRY & DRYCLEANERS	SOUTHRIDGE MALL	SUDBURY	ON		7055221415	5
RUB-A-DUB DRYCLEANERS	470 HODDAR AVE	THUNDER BAY	ON		8076833020	5
UPTOWN CLEANERS LTD	772 LASALLE	SUDBURY	ON		7055669257	5

Dry Cleaners

BUSINESS NAME	ADDRESS	COMMUNITY	PRO	PAC	TELEPHONE	REGION
** 6						
ACME KENORA CLEANERS	120 MATHESON	KENORA	ON	P9N1T8	8074686459	6
BRITE-WAY DRIVE-IN CLEANERS & LAUNDERERS LTD	1543 ARTHUR ST E	THUNDER BAY	ON	P7E5E5	8076225324	6
DAWSON'S YOUR WARDROBE DRY CLEANERS & LAUNDRY	225 CAMELOT ST	THUNDER BAY	ON	P7A4B2	8073455032	6
DRESSWELL CLEANERS & LAUNDRY	1101 SYNDICATE AV S	THUNDER BAY	ON	P7E1G2	8076236453	6
FRANK'S LAUNDROMAT & DRY CLEANING	227 ALGOMA ST S	THUNDER BAY	ON	P7B3C3	8073443801	6
HIGHLANDER CENTRE DRY CLEANING & LAUNDROMAT	307 EUCLID AVE	THUNDER BAY	ON	P7E6G6	8075778112	6
MIDWAY CLEANERS & TAILORS	517 SIMPSON ST	THUNDER BAY	ON	P7C3J5	8076239768	6
MR C DRYCLEANERS AND LAUNDERERS (THUNDER BAY) LTD	269 RED RIVER RD	THUNDER BAY	ON	P7B1A7	8073457357	6
P & C CLEANERS	420 SECOND ST S	KENORA	ON	P9N1G6	8074686409	6
PERTH SERVICES LTD	339 MEMORIAL AVE	THUNDER BAY	ON	P7B3Y4	8073452295	6
RUB-A-DUB DRY-CLEANERS & LAUNDRYMAT	640 RIVER ST GRANDVIEW MALL	THUNDER BAY	ON	P7A3S4	8073449581	6
SUPREME CLEANERS LAKEHEAD LTD	434 EDWARD ST N	THUNDER BAY	ON	P7C4P8	8075771115	6
SUPREME CLEANERS LAKEHEAD LTD	425 SYNDICATE AVE S	THUNDER BAY	ON	P7E1E1	8076226411	6
BESTWAY DRY CLEANERS	401 MAIN	GERALDTON	ON	P0T1M0	8078540211	6
CEIL-BRITE CLEANING	ANTON RD	OXDRIFT	ON	P0V2J0	8079375776	6
CLEAN SCENE	90 EVERGREEN DR	MARATHON	ON	P0T2E0	8072290909	6
HURON WALK LAUNDERETTE AND DRYCLEANING	28 HURON WALK	MANITOUWADGE	ON		8078264612	6
IRON CITY CLEANERS	312 MAIN ST	ATIKOKAN	ON	P0T1C0	8075972375	6

APPENDIX 2

SAMPLE QUESTIONNAIRE

49 Eglinton Avenue East/Toronto, Ontario M4P 1G6 Telephone (416) 481-6881

CLEANERS AND LAUNDERERS INSTITUTE (ONTARIO)

September 18, 1986

NOTICE

The Ontario Ministry of the Environment is evaluating the hazardous waste management practices of the Ontario dry cleaning industry.

Beak Consultants Limited has been chosen as the contractor to undertake this project.

Beak, in close cooperation with DCLI, is sending out questionnaires to 150 selected plants, and eventually will sample cartridges and muck at 20 of these to determine the extent of solvent loss through waste disposal practices.

The cooperation of plants receiving questionnaires is requested and will be appreciated; responses are to be returned by October 31, 1986. All information supplied will be kept confidential.

Questions can be directed to K. Adamson, DCLI, or J.M. Laplante, Beak Consultants at (416)522-4651 and (416)671-2600 respectively.

QUESTIONNAIRE

TO BE RETURNED BY OCTOBER 31, 1986 TO:

BEAK CONSULTANTS LIMITED
6870 GOREWAY DRIVE
MISSISSAUGA, ONTARIO
L4V 1P1

ATTENTION: J.M. LAPLANTE

NOTE

If you are only a depot, please forward this questionnaire to the main plant that handles your dry cleaning.

CONFIDENTIALITY OF INFORMATION

Information obtained from this questionnaire will be used solely to provide industry wide ranges and averages of the data requested. Individual plant responses will be retained by Beak Consultants Limited, as confidential information and will not be released to the Ministry of the Environment.

Questionnaire No. __________

1. Company Name: ______________________________

   Address: ______________________________

   Contact Name and Telephone No.: ______________________________

2. Number of dry cleaning plants operated: ______________

3. Ontario Waste Generator Number(s) for above (attach separate sheet as required):

   ____

4. DCLI Member: Yes ________ No ________

The following questions should be answered for each type of solvent used (if more than one used).

5. Name of solvent used: ______________________________

6. Monthly quantity of dry cleaning processed: ____________ lb., or ____________ kg

7. Of the quantity in Question 6, how much would be classed as "industrial dry cleaning" (rags, uniforms): ____________ lb., or ____________ kg

8. Quantity of solvent purchased annually: ____________ litres, or ____________ gallons

9. Type of technology used (check one):
   Transfer ____________
   Hot Type Enclosed ____________
   Refrigerated ____________

10. Total capacity of washers or washer/extractors: ____________ lb., or ____________ kg

11. How many solvent reclaiming tumblers do you operate? ____________

12. How many conventional tumblers do you operate? ____________

13. How many solvent distillation units do you operate? ____________

14. How many diatomaceous earth filters do you operate? ____________

15. How many of each type of cartridge filters do you operate?

   Standard size ____________
   Jumbo (large) size ____________

16. Estimate the yearly quantities and types of the following wastes that you dispose and how you dispose of them (quantities in lb. per year, gallons per year, cartridges per year) (disposed to municipal garbage, industrial garbage, recycler, returned to supplier):

Waste	Quantity	Disposed to
Still Bottoms	____________	____________________
Filter Muck	____________	____________________
Plain Paper Cartridges	____________	____________________
Carbon Core Cartridges	____________	____________________
Solid Carbon Cartridges	____________	____________________
Absorptive Type Cartridges	____________	____________________
Other, explain:		
____________________	____________	____________________

17. Check the in-plant method you use to recover solvent from cartridges:

   No method used ____________
   Cabinet/tumbler ventilation ____________
   Steam stripping ____________
   Other (explain) ______________________________________

18. List the flash points, solvent content and how this information was obtained (to the best of your knowledge) for the wastes identified in Question 16.

Waste	Flash Point (^oC or ^oF)	Solvent Content (% or ppm) (parts per million)	How Obtained (lab estimate
Still Bottoms	________	________	________________
Filter Muck	________	________	________________
Plain Paper Cartridges	________	________	________________
Carbon Core Cartridges	________	________	________________
Solid Carbon Cartridges	________	________	________________
Absorptive Type Cartridges	________	________	________________
Other, explain:			
____________________	________	________	________________

19. If your waste goes to the municipal garbage, have you tried to have it picked up by some other company or means? Yes ________ No ________

20. If the answer to Question 19 was yes, what was the problem in having your waste picked up? (Explain):____

____

21. Have you had a problem in obtaining information or advice on waste disposal from either the Ministry of Environment or DCLI? Yes ________ No _____
If yes, explain: ____
If no, have you tried to obtain information? Yes ________ No _____

22. If there are differences in the quantity of dry cleaning you process during the year, indicate below which months are heavy (H), light (L) or average (A):

January	________	July	________
February	________	August	________
March	________	September	________
April	________	October	________
May	________	November	________
June	________	December	________

23. What method would you use, how much would it cost, and why would you choose that method if your waste is considered hazardous and requires special disposal methods?

Method	Cost	Reason
Industrial Haul	________	________________
Solvent Recycler	________	________________

Install new equipment to make waste non-hazardous ________ ____________________

Install new equipment to reduce waste quantity ________ ____________________

Sell or go out of business ________ ____________________

Other ____

24. Are you interested in having your sludges or cartridges analyzed as part of this study? Yes ________ No ________

APPENDIX 3

ANALYTICAL METHODS

APPENDIX 3

BAS ANALYTICAL PROCEDURE FOR PERCHLOROETHYLENE AND PETROLEUM SOLVENT

1.0 CARBON, SLUDGES, FILTER MUCK

1.1 Extraction

A representative portion of carbon is taken (about 50 mg).

The charcoal is added to a small 2 ml septum cap vial containing 1 ml CS_2. The vial is tightly capped.

The charcoal is desorbed by occasional mixing for 1.0 hours. Extract is ready for GC/FID.

1.2 GC Conditions

Column:	DB - 1 J+W capillary column. 0.32 mm x 15 m., film thickness 0.25 um.
Injection Temp.:	200°C.
Oven Temp. Prgm.:	50°C for 2 mins., then 7°C/min to 200°C, hold for 5 mins.
Detector:	Flame Ionization Detector.
Detector Temp.:	280°C.
Carrier Gas:	Hydrogen 8 ml/min.
Detector Gases:	Hydrogen 30 mls/min. Air 200 mls/min.

2.0 FILTER PAPER

2.1 Extractions

A representative sample of filter paper is taken, about 50 grams.

The filter paper is extracted by soxlet extractor using dichloromethane as a solvent for 4.0 hours.

The final volume is made up to 200 ml in dichloromethane, and ready for GC/FID.

2.2 GC Conditions

Column:	DB - 1 J+W capillary column. 0.32 mm x 15 m., film thickness 0.25 um.
Injection Temp.:	$200^{o}C$.
Oven Temp. Prgm.:	$50^{o}C$ for 2 min., then $7^{o}C/min$ to $200^{o}C$, then hold for 5 mins.
Detector:	Electron Capture Detector Ni^{63}.
Detector Temp.:	$300^{o}C$.
Carrier Gas:	Hydrogen 8 ml/min.
Make-Up Gas:	Nitrogen 20.25 ml/min.

3.0 QA/QC

(i) 10% replication.

(ii) sample fortification (spiking).

(iii) extraction or desorption efficiency.

(iv) EPA reference solutions.

ANALYTICAL METHODS FOR DETERMINING PERCHLOROETHYLENE (PCE) AND PETROLEUM SOLVENT RESIDUES

I. PCE in Activated Carbon

A. Desorption of PCE from Darco Activated Carbon.

Methods for desorbing organic solvents from activated carbon with carbon disulfide (CS_2) have been described in the literature (1, 2, 3). We have adopted a method similar to these.

1. Determination of Desorption Efficiency of PCE from Darco Avtivated Carbon with CS_2.

   Five activated carbon samples (ca. 0.2000g) were analytically weighed into 30 ml screw cap vials. To four of the vials, 10 ul (16.2 mg.) of PCE was injected directly onto the carbon. The fifth was a blank. The samples were left to stand overnight to ensure complete adsorption. The following day, 2 ml of CS_2 were pipetted into each vial. Samples were shaken for 30 minutes. Just prior to analysis, 2 ml of CS_2 containing an internal standard were added to the sample to be analyzed.

2. Internal Standard and Calibration Mixture Preparation.

   The internal standard was prepared by adding a small amount (ca. one drop of internal standard, we used cyclohexane) to approximately 100 ml of CS_2. A standard PCE solution was prepared by analytically weighing 0.1 gm of PCE into a 100 ml volumetric and filling with carbon disulfide.

   The calibration mixture is prepared by pipetting 5 ml of the internal standard solution and 5 ml of the standard PCE solution into a vial and mixing.

3. GLC Analysis (Gow Mac 750 FID).

GLC conditions were as follows:

Column:	6' x 1/8", 0.1% SP-1000 on Carbopack C 80/100.
H_2 Flow:	20 ml/min.
N_2 Flow:	20 ml/min.
Air Flow:	250 ml/min.
Sensitivity:	10^{-12}.
Attn:	8.
Column Temp.:	160°C (isothermal).
Inj. Temp.:	175°C.
Det. Temp.:	175°C.
Sample Volume:	1 ul.

B. Analysis of Activated Carbon.

1. Desorption of PCE from Darco Activated Carbon with CS_2.

Core samples were taken from the carbon chamber of the cartridges being sampled by inserting a 5/8" I.D. pipe along the length of the chamber.

Sub-samples (ca. 0.2000g) were weighed into tared 5 ml screw cap vials. The samples were then handled in an identical manner as those in Section A-1.

2. Internal Standard and Calibration Mixture Preparation.

Same as Section A-2.

3. GLC Analysis.

GLC conditions were identical to those in Section A-3.

4. Calculations.

The integrator (HP-3390A) was programmed to give sample concentration of PCE in units of gm/l or mg/ml directly. Amounts of PCE desorbed were then determined by multiplying the sample concentration by the sample volume. Percent PCE in the sample could then be determined from the sample weight after correcting for the desorption efficiency. Multiplying the percent PCE in the carbon by the total carbon weight in the cartridge then yields the total PCE in the cartridge carbon.

C. Extraction of PCE from Paper with Methylene Chloride ($CH_2 Cl_2$) in a Soxhlet Extractor.

1. Extraction Efficiency of PCE from Paper.

For this method, a large Soxhlet Extractor was used (Note 1). A sample of paper (4" x 2.5" x 2") taken from a new cartridge was placed in an extraction thimble (100 mm x 60 mm) and dropped into the Extractor. An analytically-weighed amount of PCE was added to the paper sample. Some samples were then treated with water. Five hundred millilitres of CH_2Cl_2 were added to the flask and approximately 200 ml were added to the Extractor. After extracting several hours, the Extractor was flushed with a few portions of fresh solvent. the contents of the flask were then transferred to a 1 L volumetric flask. Chlorobenzene (0.300-1.000 g) was added as internal standard; the flask was filled and shaken. Four samples were analyzed in this manner.

2. Calibration Mixture.

A calibration mixture was prepared by adding PCE (ca. 0.1000 g) to a 100 ml volumetric flask, filling with CH_2Cl_2 and shaking. From this flask, 10 ml was pipetted to another 100 ml volumetric flask. To this flask, chlorobenzene (ca. 0.1000 g) was added. The flask was filled with CH_2Cl_2 and shaken. This calibration mixture contained 0.0100 g PCE/100 ml and 0.1000 g chlorobenzene/100 ml.

3. GLC Conditions.

Identical to those in Section I-B-3, except:

Initial Temp.:	160°C.
Initial Time:	2 min.
Ramp:	20°C/min.
Final Temp.:	200°C.
Final Time:	5 min.
Sample Volume:	4 ul.

4. Results.

PCE recovery from the samples ranged from 90-100%.

D. Analysis of Paper and Dirt from Stripped Cartridges.

1. Extraction of PCE from Paper and Dirt with CH_2Cl_2 in Soxhlet Extractor.

Representative samples of paper and dirt (approximately 100 gm) were taken from each cartridge with a 2" hole saw.

Samples from the same cartridge were extracted with the same portion of solvent (total volume approximately 1 litre).

2. Calibration Mixture.

Prepare in an identical manner to Section C-2. (Note 2).

3. GLC Analysis.

Column:	10' x 1/8" SS 3% SP-1500, 80/100 Carbopack B.
Initial Temp.:	175°C.
Initial Time:	4 min.

Ramp:	$5^{o}C$/min.
Final Temp.:	$200^{o}C$.
Final Time:	16 min.
Attn:	8.
Sens.:	10^{-12}.
N_2 Pres.:	78 psi.
H_2:	15-20 ml/min.
Air:	250 ml/min.
Sample Volume:	5 ul.

Note 1: Extractor inner diameter: 65 mm; height to siphon arm: 120 mm; total capacity: approximately 500 ml. Distillation flask capacity: 1000 ml.

Note 2: For samples low in PCE, the calibration mixture was prepared by dilution of higher concentration calibration mixtures.

1) Otterson, E.J. and Guy, C.U. Trans 26th Annual Meeting, A.C.G.I.H., 37 (1964).
2) Kupel, R.E., et.al., A.I.H.A., J.31,225 (1970).
3) Mueller, F.X. and Miller, J.A., Amer. Lab. 6(5), 49 (May, 1974).

APPENDIX 4

ESTIMATED WASTE GENERATION BY MOE REGION

TABLE A4.1: WASTE SOLVENT RESIDUALS BY GEOGRAPHIC DISTRIBUTION - REGION I

Size	Process	No. of Plants	No. of Plants Using			Solvent Losses		
			Stills	Diatomaceous Earth Filters	Cartridges	Stills (kg/yr)	Filter Muck (kg/yr)	Cartridges (kg/yr)
Perchlorocthylene								
Small	Transfer	68	47	6	62	2900	300	3700
	Hot	42	34	2	36	3400	100	1500
	Refrigerated	3	2	-	3	200	-	400
	Subtotal	113	83	8	101	6500	400	5600
Medium	Transfer	13	12	1	12	6500	50	4700
	Hot	7	7	1	6	2500	600	300
	Refrigerated	4	3	1	3	500	150	200
	Subtotal	24	22	3	21	9500	800	5200
Large	Transfer	2	2	1	1	900	500.	300
	Hot	2	2	-	2	4000	-	400
	Refrigerated	-	-	-	-	-	-	-
	Subtotal	4	4	1	3	4900	500	700
	Total	141	109	12	125	20900	1700	11500
Petroleum								
Small	Transfer	12	6	4	10	1200	200	900
Medium	Transfer	2	0	1	2	-	-	700
Large	Transfer	1	1	-	1	9400	-	1700
	Total	15	7	5	13	10600	200	3300

TABLE A4.2: WASTE SOLVENT RESIDUALS BY GEOGRAPHIC DISTRIBUTION - REGION 2

Size	Process	No. of Plants	No. of Plants Using			Solvent Losses		
			Stills	Diatomaceous Earth Filters	Cartridges	Sludges (kg/yr)	Filter Muck (kg/yr)	Cartridges (kg/yr)
Perchloroethylene								
Small	Transfer	68	47	6	62	2900	300	3700
	Hot	42	34	2	36	3400	100	1500
	Refrigerated	3	2	-	3	200	-	400
	Subtotal	113	83	8	101	6500	400	5600
Medium	Transfer	11	11	-	11	5900	-	4300
	Hot	6	6	1	5	2200	600	300
	Refrigerated	3	2	-	2	300	-	100
	Subtotal	20	19	1	18	8400	600	4700
Large	Transfer	4	4	1	3	1900	600	1000
	Hot	4	4	-	3	8000	-	600
	Refrigerated	-	-	-	-	-	-	-
	Subtotal	8	8	1	6	9900	600	1600
	Total	141	110	10	125	24800	1600	11900
Petroleum Solvent								
Small	Transfer	12	6	4	10	1200	200	900
Medium	Transfer	2	1	1	2	-	-	700
Large	Transfer	1	1	-	1	9400	-	1700
	Total	15	8	5	13	10600	200	3300

TABLE A4.3: WASTE SOLVENT RESIDUALS BY GEOGRAPHIC DISTRIBUTION - REGION 3

Size	Process	No. of Plants	No. of Plants Using: Stills	No. of Plants Using: Diatomaceous Earth Filters	No. of Plants Using: Cartridges	Solvent Losses: Sludges (kg/yr)	Solvent Losses: Filter Muck (kg/yr)	Solvent Losses: Cartridges (kg/yr)
Perchlorocthylene								
Small	Transfer	365	256	33	333	15600	2000	19600
	Hot	225	186	12	194	18800	500	8000
	Refrigerated	18	14	-	18	1300	-	2500
	Subtotal	608	456	45	545	35700	2500	30100
Medium	Transfer	75	73	2	73	39300	100	28500
	Hot	37	37	4	31	13500	2400	1800
	Refrigerated	23	19	5	17	2800	600	900
	Subtotal	135	129	11	121	55600	3100	31200
Large	Transfer	8	7	3	5	3400	1700	1600
	Hot	8	8	1	7	16000	700	1500
	Refrigerated	1	1	-	1	800	-	300
	Subtotal	17	16	4	13	20200	2400	3400
	Total	760	601	60	679	111500	8000	64700
Petroleum Solvent								
Small	Transfer	68	34	20	54	6000	900	4900
Medium	Transfer	15	4	4	15	800	100	5300
Large	Transfer	2	1	1	2	9500	14700	3400
	Total	85	39	25	71	16400	15700	13600

TABLE A4.4: WASTE SOLVENT RESIDUALS BY GEOGRAPHIC DISTRIBUTION - REGION 4

Size	Process	No. of Plants	No. of Plants Using: Stills	No. of Plants Using: Diatomaceous Earth Filters	No. of Plants Using: Cartridges	Solvent Losses: Sludges (kg/yr)	Solvent Losses: Filter Muck (kg/yr)	Solvent Losses: Cartridges (kg/yr)
Perchlorocthylene								
Small	Transfer	44	31	4	40	1900	250	2400
	Hot	27	22	1	24	2200	50	1000
	Refrigerated	3	2	-	3	300	-	400
	Subtotal	74	55	5	67	4400	300	3800
Medium	Transfer	6	6	-	6	3200	-	2300
	Hot	3	3	-	2	1100	-	100
	Refrigerated	2	2	-	1	400	-	100
	Subtotal	11	11	-	9	4700	-	2500
Large	Transfer	3	3	1	2	1400	600	600
	Hot	4	4	1	4	8000	600	900
	Refrigerated	0	0	-	-	-	-	-
	Subtotal	7	7	2	6	9400	1200	1500
	Total	92	73	7	82	18500	1500	7800
Petroleum Solvent								
Small	Transfer	8	4	2	6	900	100	600
Medium	Transfer	2	1	-	2	100	-	700
Large	Transfer	0	0	-	-	-	-	-
	Total	10	5	2	8	1000	100	1300

TABLE A4.5: WASTE SOLVENT RESIDUALS BY GEOGRAPHIC DISTRIBUTION - REGION 5

Size	Process	No. of Plants	No. of Plants Using: Stills	No. of Plants Using: Diatomaceous Earth Filters	No. of Plants Using: Cartridges	Solvent Losses: Sludges (kg/yr)	Solvent Losses: Filter Muck (kg/yr)	Solvent Losses: Cartridges (kg/yr)
Perchloroethylene								
Small	Transfer	17	12	1	15	700	60	900
	Hot	11	9	1	9	900	40	400
	Refrigerated	1	1	-	1	100	-	100
	Subtotal	29	22	2	25	1700	100	1400
Medium	Transfer	3	3	-	3	1600	-	1100
	Hot	2	2	-	2	700	-	100
	Refrigerated	1	1	-	1	200	-	100
	Subtotal	6	6	-	6	2500	-	1300
Large	Transfer	0	0	-	-	-	-	-
	Hot	0	0	-	-	-	-	-
	Refrigerated	0	0	-	-	-	-	-
	Subtotal	0	0	-	-	-	-	-
	Total	35	28	2	31	4200	100	2700
Petroleum Solvent								
Small	Transfer	3	2	1	2	400	100	100
Medium	Transfer	1	0	-	1	-	-	400
Large	Transfer	0	0	-	-	-	-	-
	Total	4	2	1	3	400	100	500

TABLE A4.6: WASTE SOLVENT RESIDUALS BY GEOGRAPHIC DISTRIBUTION - REGION 6

Size	Process	No. of Plants	No. of Plants Using: Stills	No. of Plants Using: Diatomaceous Earth Filters	No. of Plants Using: Cartridges	Solvent Losses: Sludges (kg/yr)	Solvent Losses: Filter Muck (kg/yr)	Solvent Losses: Cartridges (kg/yr)
Perchlorocthylene								
Small	Transfer	8	6	1	7	300	60	400
	Hot	5	4	-	4	300	-	200
	Refrigerated	0	0	-	-	-	-	-
	Subtotal	13	10	1	11	600	60	600
Medium	Transfer	2	2	-	2	1000	-	700
	Hot	1	1	-	1	400	-	100
	Refrigerated	0	0	-	-	-	-	-
	Subtotal	3	3	-	3	1400	-	800
Large	Transfer	-	-	-	-	-	-	-
	Hot	-	-	-	-	-	-	-
	Refrigerated	-	-	-	-	-	-	-
	Subtotal	0	-	-	-	-	-	-
	Total	16	13	1	14	2000	100	1400
Petroleum Solvent								
Small	Transfer	2	1	1	2	200	100	200
Medium	Transfer	-	-	-	-	-	-	-
Large	Transfer	-	-	-	-	-	-	-
	Total	2	1	1	2	200	100	200

APPENDIX 5

ESTIMATED WASTE QUANTITY DISTRIBUTION BY DISPOSAL PRACTICE

TABLE A5.1

ESTIMATED QUANTITY OF SOLVENT LOSSES IN STILL BOTTOM SLUDGES BY DISPOSAL PRACTICE

Size	Process	Disposal Practice	SURVEY RESULTS: No. of Plants	%	Quantity of Sludge (kg/yr)	Quantity of Solvent in Sludge (kg/yr)	(kg/plant/yr	PROVINCE WIDE: Total No. of Plants	No. of Plants Using Particular Disposal Practice	Quantity of Solvent in Sludge (kg/yr)
Perchloroethylene										
Small	Transfer	recycle	11	65	2200	625	57	570	370	21100
		garbage	1	5	300	90	90		29	2800
	Hot	recycle	13	71	4500	1285	100	352	250	25000
		garbage	2	11	800	225	110		39	3900
	Refrigerated	recycle	3	75	1000	285	95	28	21	2000
Medium	Transfer	recycle	31	91	61800	17600	570	110	101	57200
		garbage	1		300	85	85		3	300
		stockpiling	1		600	.170	170		3	500
	Hot	recycle	6	86	8700	2480	410	56	48	19800
		garbage	1	14	300	85	85		8	700
	Refrigerated	recycle	10	82	5200	1480	150	33	27	4000
Large	Transfer	recycle	14	93	23600	6725	480	17	16	7700
	Hot	recycle	14	100	98200	27985	2000	18	18	36000
	Refrigerated	recycle	1	100	3100	885	885	1	1	900
							Totals	1185	934	181900
Petroleum Solvent										
Small	Transfer	industrial landfill	1	10	1300	390	390	105	11	4300
		garbage	2	20	1000	300	150		21	3100
		stockpiling	2	20	600	180	90		21	1900
Medium	Transfer	garbage	2	25	400	120	60	22	6	400
Large	Transfer	industrial landfill	2	67	66300	19890	9945	4	3	29800
							Totals	131	62	39500

TABLE A5.2: ESTIMATED QUANTITY OF SOLVENT LOSSES IN FILTER MUCK BY DISPOSAL PRACTICE

Size	Process	Disposal Practice	SURVEY RESULTS: No. of Plants	%	Quantity of Muck (kg/yr)	Quantity of Solvent in Muck (kg/yr)	Quantity of Solvent in Muck (kg/plant/yr	PROVINCE WIDE: Total No. of Plants	No. of Plants Using Particular Disposal Practice	Quantity of Solvent in Muck (kg/yr)
Perchloroethylene										
Small	Transfer	garbage	3	9	700	170	55	570	51	2800
	Hot	garbage	1	5	200	50	50	352	18	900
	Refrigerated	-	-	-	-	-	-	28	-	-
Medium	Transfer	garbage	1	3	100	25	25	110	3	100
	Hot	garbage	2	11	5000	1220	610	56	6	3700
	Refrigerated	garbage	2	18	1000	245	120	33	6	700
Large	Transfer	industrial landfill	5	33	11800	2880	575	17	6	3500
	Hot	industrial landfill	2	13	5300	1295	650	18	2	1300
	Refrigerated	industrial landfill	-	-	-	-	-	1	-	-
							Totals	1185	92	13000
Petroleum Solvent										
Small	Transfer	garbage	3	30	900	145	50	105	32	1600
Medium		garbage	1	25	100	15	15	22	6	100
Large		industrial landfill	1	33	90700	14700	14700	4	1	14700
							Totals	131	39	16400

TABLE A3.3: ESTIMATED QUANTITY OF SOLVENT LOSSES IN FILTER CARTRIDGES BY DISPOSAL PRACTICE

Size	Process	Disposal Practice	No. of Plants	%	SURVEY RESULTS Solvent Content in Cartridge (kg/plant/yr) SCC	SAC	SPP	JCC	JAC	JPP	JAD	Total	PROVINCE-WIDE No. of Plants	No. of Plants Using Method	Total Solvent Losses (kg/yr)
Perchloroethylene															
Small	Transfer	garbage	27	88	14	3	0.1	9	11	-	22	59.1	570	502	29,700
		industrial landfill	1	3	36	16	-	-	-	-	-	52		17	900
	Hot	garbage	15	76	13	9	0.2	5	3	0.2	14	44	352	268	11,900
		industrial landfill	2	10	16	-		-	-	-	-	16		34	500
	Refrigerated	garbage	2	100	41	16	-	84	-	-	-	141	28	28	3,900
Medium	Transfer	garbage	32	97	6	44	0.2	316	25	0.2	-	391.4	110	107	41,800
	Hot	garbage	15	83	19	4	-	5	4	-	26	58	56	47	2,700
	Refrigerated	garbage	7	64	19	7	0.3	-	-	-	34	60.3	33	21	1,300
		industrial landfill	1	9	29	19			-	-	-	48.0		3	100
Large	Transfer	garbage	10	67	91	12	-	31	43	-	146	323	17	11	3,600
	Hot	garbage	15	83	49	21	-	56	-	-	57	183	18	15	2,700
		industrial landfill	1	6	-	-	-	668	-	-	-	668		1	700
	Refrigerated	garbage	1	100	-	52		157	-	-	-	209	1	1	200
														Total	100,000
Petroleum Solvent															
Small	Transfer	garbage	8	80	26	7	-	2	15	-	41	91	105	84	7,600
Medium		garbage	3	75	51	15	-	167	-	-	163	396	22	16	6,300
		industrial landfill	1	25	-	-	-	-	-	-	257	257		6	1,600
Large		garbage	2	67	-	-	-	809	75	284	64	1,232	4	3	3,700
		industrial landfill	1	33	-	2100	900	-	-	-	-	3000		1	3,000
														Total	22,200